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THE CARE OF THE PATIENT*

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BALTIMORE

IT WAS a happy idea to have an annual lecture here on "The Care of the Patient," for, as your chairman, Dr. Bauer, has phrased it, it affords an opportunity "to emphasize many of the things which the student cannot possibly be aware of because he has never practiced." Perhaps those responsible for the thought were impressed with the impossibility of arranging a curriculum so inclusive that it would comprise all that a medical man should know. Perhaps they received this impression from their personal experience, mindful of how at graduation they ceased abruptly to be good medical students and were at once poor doctors; or it may be that they came to their conclusion by their observation of practicing colleagues or by what the latter told them.

The concept cherished through the ages that a physician is worthy and able to serve the suffering is the ideal of the doctor today. All that has been done and is being done in the study of the cause, the prevention, the manifestations and the evolution of disease has had and still has for its ultimate aim the palliation and the cure of sickness.

The engineer, the mechanic, the artisan of every sort, works with materials of known composition, quality and strength, of standardized assembly and number. If faults develop, he has the means to determine their causes, to repair and to replace parts that have become worn or have deteriorated, to relocate the machine. You, as physicians, will deal with a structure more complex, less understood, with a great many parts, all of which are not only self-wearing but must be self-repairing, and the evidences for the defects of which may be quite elusive. To find the individual faults and to piece them together in a way to disclose the damage in its entirety will often tax you more than it does a detective to find the clues and to procure the incriminating evidence of a cleverly executed crime, and to remedy them will be as difficult as it would be for a prosecutor to convict a powerful politician in a partisan-controlled community. You may be skilled in the sciences, facile with chemical, physical, biological and many other technics, you may know the physical manifestations of many diseases, you may contribute to the store of knowledge and be a medical scientist, but you will not be a physician until you have developed what has been called a clinical sense. This is an acquired faculty based subtly but soundly on a broad knowledge, a retentive memory, a discriminating and orderly habit of mind, combined with an understanding of mankind.

What is a patient? Literally, he is "one who suffers, bears or endures—a sick person." Practically, he is an individual who is under medical or surgical treatment. The diseased attract the interest of the physician; the patient commands his solicitous care that is helpful in so far as it is founded securely on a sympathetic understanding of the individual and a knowledge of medicine. In the study of disease, the basis of the patient's ills, progress has been slow and difficult. The study of structure, of function, of physical and emotional symptoms, of reactions to all external stimuli and to empirical treatment initiated a comprehension of illness. In the course of time, many sciences became the assistants of medicine, so that diagnosis and treatment were established on a surer foundation. Sometimes, it has seemed, these helpers have altered the perspective and dimmed the aims of the helped by placing too much emphasis on the objective aspects of disease, too little on the subjective. Perhaps this was inevitable as the trends of thought changed, as the worker in the laboratory replaced the clinician in the study of medical problems. It is not surprising that instruments of precision, methods of chemical or physical analysis or other types of laboratory investigation have been sup-

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planting instead of supplementing the clinical study of the patient. Although these exact procedures are helpful, they are only accessories in the care of the sick man, for clinical problems emanate from the clinic, and there the solution of them must be tested. Occupied by his interest in and respect for scientific methods, the doctor is apt to become unmindful of the fact that the beginnings of disease are insidious, cause little disturbance of function and give no detectable signs. Sooner or later they lead to the development of symptoms; the affected person feels that he is not well, and he seeks advice first at a time when the most careful examinations known will fail to disclose any objective cause for his discomfort. His subjective sensations are the earliest manifestations of ill-health. How little many of them are understood and how often they are misinterpreted! Who among physicians has not labeled such a complainer without abnormal signs a hypochondriac, a neurotic or even a malingerer, only to be embarrassed later to find that disease had developed and made him ready to subscribe to the saying of the late William S. Thayer, "After twenty years I relabel my neurotics my diagnostic errors." How many of you third-year and fourth-year students have not already on being asked when you had left an out-patient department or ward, "What did you see today?" replied with disgust, "Just another neurotic"? There are many people with what are called functional disorders. Many have no organic disease, but until precise and careful studies shall have established all the causes and the full significance of such common sensations as pain, weakness, dizziness, palpitation and a host of others, the differentiation between a neurosis and an early stage of physical disease may be impossible and may necessitate frequent critical review. It may take several years and some sad experiences to teach the full meaning of a subjective symptom.

You have been taught that the proper care of the patient should start at the first meeting with him; that from the beginning he must be regarded not merely as an example of some disease, not solely a problem for research, but as an animate being with all the attributes of man, psychic and somatic, liable to any or all the ills to which man is heir. In addition to his tissues and organs, he is endowed with a capacity to feel, to think and to act as an individual. He has an endurance, a reserve or a resistance peculiar to himself. He is identical with none other.

Put at ease, encouraged freely to tell what troubles him, listened to with sympathy, questioned intelligently, impressed by your interest in him and in his difficulty, he will disclose shortly the type of man he is; than this there is no single datum more valuable as a guide to a correct diagnosis and to proper treatment. However, if your attitude seems detached or cold, or if your questions are badly phrased, his response may be incomplete or worded so as to conceal essential facts. Through the consideration of man as a psychobiological unit, the first manifestations of emotions or disease in different individuals have been established. Just as anxiety or fear causes weakness in one, diarrhea or diuresis in another, and tachycardia or palpitation in a third, so also anoxia of the heart muscle may cause pain in some, and dyspnea or faintness without pain in others who are less sensitive; or two duodenal ulcers apparently identical as to size and activity may be responded to very differently by two hosts. By the same token, it is scarcely necessary to predicate that there are different strains of tubercle bacilli in order to explain why localized tuberculosis of the lungs manifests itself by a general constitutional reaction or by symptoms referable to a dysfunction of the thoracic, abdominal or pelvic organs. Thus, even though the etiology of a disease be unitary, its manifestations may vary greatly, and the factors responsible for an atypical response cannot be determined except through a better understanding of the patient as a whole.

To those of you who have already served an apprenticeship in this school, these facts and those that follow are not new, but it should be emphasized that your practice while undergraduate students has been different in some measure from that of the doctor in the outside world. In the clinic, a patient may perhaps be content to be a case of this or that, to be the hub of your investigation or material for instructing you. He came to the hospital with the idea that his problem demanded compliance with conditions there, and he has faith that such compliance will be helpful to him. In the consulting room or in the home, the applicant for care regards himself as your patron; he has chosen you by chance, on the recommendation of a friend, or because of some particular aptitude he has heard that you possess. No "case," no material, no subject for demonstration, he expects what all patients in hospitals or outside them should and can receive — your personal attention, your solicitude, as well as the study that is his by right. Your professional standing in the hospital may be high despite a neglect of and a proper regard for the patient as an individual. Your success in private practice may be sacrificed solely through want of it. Beyond peradventure, the attention given to the patient's sensations, to his re-

sponses to his environment as well as to his infirmities, is often as important in determining the outcome of many minor ailments as are the remedies prescribed, and it is as vital in promoting the comfort of the gravely sick as is any form of symptomatic treatment. You yourself will want to give this attention and will delegate it to another reluctantly, and then only to someone better trained than you to give it; for to surrender the opportunity directly to mobilize the forces and to direct the battle to restore a needed adjustment will be to forego the thrill of attuning a personality.

Your study of the patient should be skillful and intelligently complete, not needlessly comprehensive. If every known examination were made of every patient, much that goes undiscovered in diagnosis might be revealed, but who could survive the ordeal physically, psychically or financially? Certainly, a sufficiently complete diagnostic survey should be made of each condition until its nature is clear, but the routine performance of needless tests indicates a lack of skillful observation and thinking, dulls clinical acumen, penalizes patients, wastes time and material, and gives the public an incorrect view of the cost of sound medical care. Do not misinterpret — let the study be thorough, expand it as far as need be to solve a given riddle or to advance knowledge, but do not expect mere elaboration of procedure to replace your clinical sense, nor rely on it to impress your colleagues or your clientèle. It is not so long since an aged colored woman who entered a large municipal hospital because of a "misery" in her back underwent studies of her metabolism, of her renal function, of the chemical constituents of her blood, and x-ray examinations of her spine and kidneys, when a simple pelvic examination made more promptly would have shown that the cause of her symptoms was a sizable carcinoma of the cervix.

Even at the risk of being considered backward, learn better to look and to see. Observation, still the most informative of all clinical methods, seems so simple that it is practiced too little. Yet what other means gives an insight so quickly into a diagnostic and therapeutic problem? To the seeing eye, a glance reveals the apparent age, sex, size, color, nutrition, mood, changes of the skin (native or factitious), comfort or discomfort, and clues of circulatory, pulmonary, abdominal and endocrine disease, even of habits past and present and of occupation. To the trained eye, all that is seen is pregnant with information. To the eye that has not learned to see, it is barren. To the former, there is opened a vista of diagnostic, therapeutic, even prognostic data that no other single procedure could reveal. Osler used to have the third-year students at Johns Hopkins University School of Medicine read Voltaire's "Story of Zadig," and then have them practice that oriental Hawkshaw's method of finding the horse thief in seeking to detect the robber of health.

How quickly accurate observation helped to solve one man's problem! A man about thirty-five years of age, had been quite well until several weeks before he came to the dispensary because he had developed abdominal cramps, tenesmus and a watery diarrhea. Daily the severity of his symptoms had increased. He had lost weight and strength. The examinations made in order to discover the cause of the illness would have been many had not the presence of numerous silvery specks on the skin and hair aroused interest. It was a simple matter to ascertain that they came from the cheap wallpaper newly hung in his bedroom; with the knowledge that such wallpaper contains arsenic, it was easy to infer that the patient had arsenical poisoning, and he was cured by being moved to another room. Again, in the case of a young girl with mitral stenosis, direct inspection revealed multiple telangiectases on the skin and nasal mucosa, which readily explained the patient's recurring epistaxis, and thus dispelled a fear that they were caused by a bacterial endocarditis or a rheumatic purpura. Like the Chinaman, do not just look but "look-see," and after seeing well, supplement the general survey by whatever other examinations are needed to prove what ails the sick man. "He will treat the disease properly whom the first origin of the cause has not deceived."

During the period of investigation, be thorough and avoid living by the watch, for haste causes errors of omission more numerous and frequently more serious than are those of commission. In giving advice or information, be deliberate, not hesitant; cheerful, not facetious; understanding, but sympathetic only in so far as this will not be prejudicial to treatment. It is well to give patients who have an acute or a self-limited disease an approximate estimate of when they will recover and when they will be able to resume their usual activities, for such information will be a comfort to them, but with those whose period of illness is, so far as you can say, indeterminate, do not guess. If you state the likely length of incapacity and it proves to be shorter than promised, it may be a gratification, whereas if it be longer than was forecast, there will be disappointment or even depression.

In the hospital and the home, a knack or facility in carrying out what are considered generally to be nursing procedures is often useful; the arrangement of pillows and rolls probably accomplish as much for Rollier in his treatment of tuberculosis of the bones and joints as do the supports and extension used generally by others. Ingenuity in devising and setting a back rest or in placing a binder or sandbag may lessen dyspnea, local pain or cough more effectually than a drug, and unlike the latter, may remove the pain from the patient instead of divorcing the patient from his pain. So, too, if you can fill a prescription for a cook or a nursemaid, supply a hobby for idleness or alter the habits of a member of the household, you may cure the bodily expressions of ineffectual effort, convert a complaining parasite into a cheerful producer, and abort a state of invalidism that was based on unhappiness. Regard a person as an important patient only in so far as he needs your care, and not with relation to his financial or social position. You will find it helpful to appraise the intellectual and the emotional status of the patient and of his household, partly to determine how likely they are to co-operate with you, and partly to judge how best to tell them the facts they should know.

In many cases, to gain the full co-operation of the patient you must tell him exactly the nature or the gravity of his illness. If he has a disease that demands rest, will he abandon his career to secure it when he has been assured that he has no serious physical fault? Put yourself in his place, and consider what your reaction would be if in one breath you were assured that examination showed no reason to consider your pain to be of circulatory origin, and in the next were counseled to withdraw from active practice, to abstain from tobacco, from physical and emotional strain and to take a vasodilating drug. If the patient has a metabolic disorder, will he control his desires unless he is convinced that there is need to? Would you give over your epicurean delights without convincing word that it was necessary to do so?

How best to acquaint anyone with the facts of his condition may be difficult and take both time and finesse, but the reward is worth the effort. Bad tidings need not be imparted brutally, — even in boxing one does not hit below the belt, — and hard facts may be softened with a padding of careful phrasing and still have their import sufficiently clear. Secrecy invites discovery, and if discovery of concealment and falsehood comes, it will break the confidence on which the success or failure of treatment often depends, and replace it with a fear that may be worse than the truth itself would have been. If a person asks that if you find anything wrong with him you do not tell him, try to make it clear that if you made and kept that pledge he would have no benefit from your opinion, and suggest that he would be wiser to consult someone else.

When a patient is seriously ill and the outlook for him is in doubt, it is justifiable to express the hope that the chances for his recovery are better than they seem to be at the moment, but if he appears to be fatally sick, it is rarely well to indicate to him the impending outcome. There is no rigid rule that will suffice to meet all situations. If possible, and generally it is, the full truth of the situation should be told to some responsible relative or friend, provided he has sufficient intelligence, is physically and emotionally fit to receive it and is sufficiently discreet to hold a confidence. It will be necessary so to judge people as to know whether it is wiser to tell them the truth, the whole truth and nothing but the truth, or to deviate from complete frankness to the extent of deleting that part of the truth the telling of which would leave hope behind. Although generally a partial truth is worse than a lie, incomplete information that is told without distortion of fact and in a way to buffer its full significance will spare avoidable sorrow and even be a source of comfort. There is no more helpful ability in a time of grave crisis than skill — merciful, not Machiavellian — to tell bad tidings with a minimum of hurt to the hearer.

In private practice, patients with functional nervous disorders are perhaps even more numerous than they are in the hospital. An understanding of how to cure these disorders is necessary not only for that primary purpose, but because the same skill is required to deal with the psychic dysfunction that few with organic disease escape. If you learn to deal wisely with the former, you will be better equipped to treat skillfully those with physical ailments. In so far as you study them carefully to exclude latent disease, there will be fewer tokens of your diagnostic limitations, and with reasonable skill you may solve the problem for those who ignorantly but sincerely consider psychiatric care a stigma, recommending the services of a psychiatrist only for those in need of his specialized training. These patients will be your despair or your delight: your despair because of the obscure problems they may present; your delight because cared for properly they will recover and be the leaven of many depressing experiences. They cannot be dispatched toward health with "There is nothing wrong with you.

Here is your medical ticket; use it and your safe journey to Welldom is assured." They need a personally conducted tour initiated by planning and a fund of confidence. "Your case is clear. I resent for you the inference that your pains are imaginary; you have them but you misinterpret their meaning because of the way your nervous system is working at present. I know they are disagreeable, but if you will bear with them they will pass and will leave you unharmed. They are not mental; it is your emotions, not your mind, that are upset"; such statements make the fund of reassurance for the trip, the road of which is leveled by the removal of inner conflict, of maladjustments to domestic, social and economic factors, and is smoothed by physical therapy and psychotherapy. In such measure as you understand a sick personality, your treatment will succeed or fail. This is illustrated as well in the care of the tuberculous as in the treatment of a neurosis uncomplicated by bodily disease. The head of a family develops pulmonary tuberculosis. Suddenly, the course of his life is changed; to adjust him to his altered status requires more than the direction that he be resigned to an indefinite furlough from active work or that he leave his home for institutional care. Friendly, detailed inquiry may indicate that he is disturbed more by unselfish thoughts than by concern for his own well-being. If his fears for the health of his family are not allayed by careful examination of those who were exposed to his infection, if his anxiety as to how they will get on while he is ill or away is not relieved, if his disappointment and his depression, induced by a gloomy outlook on the future, are not lessened by the acquisition of a better estimate of his condition, he may refuse to accept good therapeutic advice, or if he does accept it, an uneasy mind and nervous tension during the period of enforced invalidism may slow or even prevent his recovery.

In interesting contrast to the so-called "nervous patients" are those who, although they are neither neurotic nor organically ill, are not quite healthy. They may practice moderation in all things, yet they are hampered by fatigue, aches and pains. They attempt to do more than their capacity warrants, endeavor to pursue the ways of the vigorous, and unlike psychoneurotic patients, try to ignore their symptoms and struggle to work in spite of them. They resent rather than capitalize their physical inadequacy. They are legion in practice, and however thoroughly studied show no discoverable disease. Not suggestible, well-balanced emotionally, occupied constructively, they fall a prey less readily to quackery and to cults than do their nervous brethren, but they are often the recipients of medicines instead of instructions as to how to live within the range of their physical capacities. Experienced clinicians have noted that these patients must be taught to realize that although their bodies are sound, their reserve is low; that they must be persuaded to curb their ambitions and to limit their activities, and to replace medication with living that although limited can still be useful. Their needs are not unlike those who have a chronic local disease in an otherwise fairly sound body. Since in these cases the affected part cannot be made normal, a new way of living must be sought, for successful attempts to improve the general condition too much may result in complete disability. Nature shows the way when she slows the man who has myocardial disease with an intermittent claudication, when she halts the tuberculous with lessened endurance and the hypertensive with a sense of exhaustion. It may be difficult to decide whether the restoration of a sense of efficiency would be useful or only comfortable, and it may be wise to direct such patients in an unorthodox way, or even to foster semi-invalidism in order to prolong life.

To neither of these groups will you give placebos. In fact, the placebo has no place in medicine unless it be given in answer to the cry of an anxious family that some medication be given. Prescribed solely to satisfy a patient, such treatment is a therapeutic lie and lays a foundation for mistrust or disillusionment, and is a poor substitute for re-education. More than thirty years ago, Doctor Richard Cabot cited an illustrative case to a group of us who were students at the Massachusetts General Hospital. A neurotic young woman came to the dispensary complaining that she had a frog in her stomach. The diagnostic study showed nothing physically wrong. Perhaps pressed for time, lazy or possibly mistrustful of his therapeutic ability, the physician on duty prescribed methylene blue, indicating that the medicine would dissolve the amphibian. He told the lady proof of the successful action of the drug would be visible to her — she would void green urine. She did and was convinced! But the therapeutic triumph had only a brief day. Within a short time the patient returned more distressed than ever. "Doctor, my first frog was a female — she had laid eggs before she was dissolved, and now the tadpoles make me feel worse than their mother did!" Nor could she be convinced that her first gastric tenant was a male!

There are other placebos that though unlabeled are as impotent permanently to help as are sugar

pills and potions. The administration of the newest even if untested remedies to give an impression of being up to date; the assumption of a manner of authority unwarranted by wisdom; the imparting of an idea that what is prescribed is of one's own creation; indulging in boasting, bombast or mystery, are of the same ilk. Sound practice shuns the apparent help of such crass substitutes for skill, and relies on better ways to gain and to stabilize confidence.

All that you do in the way of studying the individual patient has as its ultimate purpose understanding of how best to relieve him of his symptoms, to cure him of his illness, to help him regain and to maintain a state of efficiency. Your aim will not be merely to discover such means but to devise a plan that will be adopted, realizing that success of the regimen will be influenced by your ability to instill hope and the courage to regain health. Your responsibility in doing this will be more individual and direct in private practice than it is in the hospital. It will usually be yours alone to decide what is best to do, when and how to do it, when to stand by to carry out measures, when to remain to give moral support in order to allay fear or give comfort. If you are able to convince relatives that their absence from the sickroom is desirable so that they will forego frequent visits to it, you will save the patient the needless strain of conversation and the effort that many expend to appear better than they really are, and this will be just so much reserve spared to favor recovery. If you can persuade them that their unexpected arrival from another city will be interpreted by the sick one as a sure index of the real or potential gravity of his status, and can dissuade them from the contact with him, it will often be of more benefit than anything else you can do.

You will have to detail directions so clearly that an untrained kinsman or aide can comprehend them sufficiently well to fill them precisely, and if you leave word that you can be reached if needed, that will lessen worry. It may be that you will be inclined to rely on simple measures, the offspring of tested usage and of common sense, supplemented by some well-known medication, the indication for which is clear and the effect of which is to be relied on, but this inclination may be questioned by the opposition of volunteer advisers, for most laymen have their own medical ideas and their own favored remedies. They are sure they have a hereditary aptitude and that they have been schooled well by the press, magazines and radio. Few will be satisfied unless active measures of treatment are instituted, but although patient and tolerant with them, do not let them lead you into an unwise course. Usually, it will be simple to retain complete direction and to avoid overtreatment, but in times of crisis or impending disaster it will require fortitude to maintain a judicious inaction, to refrain from medical therapy just to be doing something. At such a time, to protect the patient from heroic treatments, from an operation of adventure rather than one of exploration, may court an indictment of incompetence, and to shield your charge from the worry and fatigue of examinations by an army of consultants may bring a criticism of self-protection or of vanity. In such case it will often profit much to explain patiently and clearly the reasons why suggested measures are not taken, why doing so would be more hurtful than beneficial; to indicate that the failure to be aggressive is based not on failure to think of utilizing this or that procedure, but on a considered rejection of them at a given time; and to reinforce your decision by helpful consultation. By such means confidence can be restored and your less divided attention can be given to the immediate care of the patient. Uninfluenced by the tide of fashion, use measures as simple and as inexpensive as possible without sacrifice of merit, but be ready to employ new remedies if you have the means available to control their action. Avoid administration by injection when the giving by mouth is as effectual, an injunction particularly timely when the urge to inject intravenously seems to be needlessly general, and withhold any other heralded remedy unless the need for it is established. Endeavor generally to utilize accepted drugs, notwithstanding the enthusiastic claim made for the superiority of proprietary preparations or for standard chemicals with a trade name, if only to save wasteful expenditure. Be informed of therapeutic advances, and although quick to adopt new measures as promptly as their worth has been established, avoid the prescription of those which have only novelty to commend them. The trust that something can be given to drive out the demon Disease lingers now as always, and has only been translated from a wishful faith in the ointment of Haldanus, in the sympathetic powder of Digby or in Perkins's tractors, to a scarcely less rational confidence in infusions, transfusions, new drugs and popular-isms. Neither unsupported claims nor the tide of fashion can challenge successfully the truth of Osler's statement that drugs are the most uncertain element in our art, nor of Benjamin Franklin's appraisal of the wise doctor as "he who knows the worthlessness of most medicines."

The protective function of the doctor gives him many problems, of which by no means the least is to determine to what extent he should employ heroic or expensive measures that frequently cause disagreeable or even dangerous symptoms, and that can only postpone briefly the fatal ending of a hopeless illness.

A man of fifty-four, with a myelosis so advanced that it had caused destruction of many ribs and involved the spine so extensively as to necessitate a completely bedridden state for twenty months, developed a pneumococcal pneumonia. Was there justification for administering sulfapyridine, that would probably have caused distressing nausea and vomiting, perhaps a painful renal colic, and made him suffer vainly and perhaps robbed him of any easy passing piloted by "the old man's friend"? And a lad of seventeen, all but moribund with a classic acute leukemia: should he not have been spared repeated transfusions, that at best could have done no more than to prolong his existence for a few brief days, and thus have lessened the financial stress of his family? In such surely fatal diseases there can be only one dictum: face reality, relieve suffering and await the closing hours. This is not to countenance euthanasia, for so long as medical knowledge is limited and prognostic judgment fallible, you will use all legitimate means to maintain life whenever there is a reasonable expectation that an adjusted living may follow the immediate crisis. Oliver Wendell Holmes indicated as much when he referred to man's unwillingness to exchange the mixture of nitrogen and oxygen called air for any other atmosphere, however light to breathe.

Rest, diet and a change of residence for the sake of health should be modified to meet individual needs. Although rest in bed is essential, even imperative at times, it will be really beneficial only if it includes a comfortable bed, competent nursing care, mental calm and the visits only of those whose brief stay may bring ease or cheer. Now and again it may fail of its purpose, unless your ingenuity and cleverness are sufficient to provide equally restful conditions on couch or chair, or to devise ways to occupy or to divert during the time of physical restriction. In the same way, the full benefits of climatic treatment are derivable only if the patient's choice of location and his reactions to altitude and to temperature are considered. One man sent to Saranac Lake feels banished to Siberia; another delights in the winter cold. One bidden to the desert will languish there, another flourish; and a change of residence made to regain or to maintain health may lose its potential value unless it weighs also the effects of the disruption of familial, social and economic ties. In planning the dietary of patients you may treat for conditions other than metabolic or allergic diseases that require definite restriction of or additions to the menu, a thoughtfully supervised choice of food often offers a way to overcome lack of appetite, to shorten convalescence and to give pleasure. Rigid ideas concerning the digestibility of any article of diet are not justified. What makes your psychic secretion flow may inhibit mine. What causes pain to one gives comfort to another. The food that distends "her" may leave "his" belt relaxed, and what binds Mary may purge John. Truly, one man's food may be another's poison, and if you fear the challenge of being unscientific, if you permit a person's taste to help determine what he shall eat, remember Richter's experiments, which demonstrated that the craving for a particular food can be caused by physiologic needs.

In order to complete the care of a sick person, it is your obligation to guide him through the time of convalescence until he has been restored not only to well-being but to normal living. Healed but not recovered, if he is deserted professionally before he is well, he may suffer needlessly or even relapse, whereas the supervised resumption of physical and of mental activity so gradually that they prevent fatigue, the provision of fresh air and of sunshine, of wholesome tempting food, of a little wine or a smoke and good company, would ensure and hasten a happy restoration of well-being.

Finally, the care of the sick includes the teaching of a way of life that is lived in accordance with the rules of hygiene in the fullest sense. If you are charged with the care of a patient who has a hereditary, a familial or a contagious disease, it is your direct obligation to teach him all known measures to prevent its transmission to others, and thus with his co-operation to endeavor to lessen the incidence of sickness and disability. This duty of preventing disease has happily received increasing attention in recent years, but it is unfulfilled at times because of carelessness, or is slighted because of the obstinacy or the selfishness of the patient. In one case, he may insist that his contemplated unwise mating menaces none in an era in which ways to prevent parenthood are accessible and reliable, and in another it may be difficult to convince him that his tuberculosis is contagious, his syphilis is communicable, his acute respiratory infection is a menace to those about him, although he is ready to recognize the hazards that another's consumption, another's pox or another's cold offers to his

fellows. In so far as each physician undertakes correctly to direct each of his patients, the incidence of disease will be lessened and the unhappy emotional upsets due to proper self-incrimination that follow disregard of sound eugenic and hygienic measures will be averted.

So on and on, the review of the essentials of the proper care of the sick might be narrated and stressed, but perhaps enough has been said to indicate the functions of him who ministers to the patient. In essence, they are to individualize the patient; to treat him rather than his disease; to protect him from misguided direction; to guide him and his family in a way that will bring a good adjustment to a temporarily or a permanently altered status, with a minimum of emotional and of economic strain and that will restore a well-ordered way of life. As Trudeau is quoted to have often said, "To cure sometimes, to relieve often, to comfort always"—that is the job of the doctor.

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THE DIAGNOSIS OF MARIE-STRÜMPELL ARTHRITIS WITH CERTAIN ASPECTS OF TREATMENT*

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MARIE-STRÜMPELL arthritis is a painful, crippling disease producing stiffening and rigidity of the spine of young persons. It is a slowly progressive, incapacitating condition, leading to complete bony ankylosis of the vertebral column and to invalidism.

It is estimated that there are 6000 invalids from various types of arthritis in Massachusetts. What proportion of them are incapacitated by Marie-Strümpell arthritis cannot be easily estimated, since there is no attempt at present to segregate the various forms. During a two-year period at the Lahey Clinic we have observed 1179 cases of arthritis, 357 of which were of the rheumatoid type. Of these, 21 (6 per cent) were of the Marie-Strümpell type. This paper is a further report of these patients, who have been under observation and x-ray treatment for at least a year. A preliminary report[1] was published in April, 1940.

The etiology of this condition is unknown. Presumably it is a form of rheumatoid arthritis usually originating in the sacroiliac articulations, and accompanied or followed by inflammation of the apophyseal joints. The inflammatory state may last from weeks to years, the joints gradually becoming stiffened. Associated with the inflammatory changes in the vertebral facets or apophyseal joints, calcification of the spinal ligaments may occur either in all these structures or in localized portions of one or more. When calcification of the spinal ligaments is complete, one sees the classic roentgenograms of the "bamboo" spine. It is a disease of young adults, the symptoms starting between the ages of twenty and twenty-five years. It is ten times more frequent in men than in women, a reversal of the sex ratio noted in other forms of rheumatoid arthritis. In this series the diagnosis was not made until the average age of thirty, showing a lapse of years between the first symptoms and the correct diagnosis.

The disease may be arbitrarily divided into three phases. In the early stage a bizarre clinical syndrome is presented, characterized by shifting pains of a rheumatic nature in the limbs, chest and peripheral joints. The pains may last for several days or weeks, then disappear for several months or years. This period is known as the pre-spondylitic phase. The process may become inactive at this time; if so, it leaves no physical handicaps. If the disease is progressive, the pain shifts to the low-back or sacroiliac region, and is said to be in the "sacroiliitis" phase. During this period the patient is frequently able to carry on his daily work, because the discomfort is more marked at night, several hours after retiring. Many patients, when awakened at night by backache, obtain relief by getting up and moving about, by taking aspirin or by being massaged. Stiffness in the early morning, which disappears following exercise, is common. Pain is often brought on by stubbing the toes or by jarring heavily on the heels when walking downstairs.

As the disease progresses, pain is present along the entire spine, associated with stiffness and eventually rigidity, producing the classic "poker-back" deformity. Occasionally there may be involvement of peripheral joints in the latter stage.

The physical findings depend on the phase of the disease. During the pre-spondylitic stage, that is,

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during the period of wandering pain, physical examination is essentially negative. In the phase of sacroiliitis there is increasing pain and tenderness along the course of the spine, limitation of motion, muscle wasting and decrease in chest expansion and vital capacity. It has been shown that pain and spasm are outstanding causes of limitation of motion, but once calcification takes place in the ligamentous structures, rigidity is complete. The most frequent deformity is dorsal bowing, with rigidity of the neck, which makes the patient carry the head in front of the body. In only 4 cases was there involvement of the peripheral joints.

Foci of infection have been searched for; they have been removed whenever possible.

A finding common in all cases during activity is an increased sedimentation rate. One patient in the series had associated diarrhea, and studies of the stool revealed idiopathic steatorrhea. Other laboratory findings have been consistently negative.

The reports of Scott,[2] Golding[3] and Forestier[4] showed that bony involvement is frequently first apparent in the sacroiliac articulation, and that only rarely is the disease present without such involvement. Study of the present series of cases confirms their findings.

Roentgen-ray diagnosis during the early or prespondylitic stage of the disease is not possible, since there are no demonstrable bone or ligamentous changes. During the phase of sacroiliitis, however, definite bony changes may involve the sacroiliac articulations, consisting of symmetrical changes of the sacroiliac region, wherein there is increased density or osteosclerotic reaction surrounding the joint, with slight narrowing of the joint spaces. In order to bring out slight bony changes in the sacroiliac joints, it is necessary to take roentgenograms of this region with the sacrum in a longitudinal axis. This projection is commonly known as the 15°-angle view and is taken with the patient in the supine position with knees flexed and with the x-ray tube tilted 15° cephalad. This projection allows a view of the sacroiliac joints without distortion.

As the disease progresses changes gradually become apparent around the apophyseal joints or articulating facets, the joint spaces appearing narrowed or obliterated. Decalcification of the body of the vertebrae may be noted, probably due to atrophy of disuse. Still later, calcification of the ligaments may be observed. Gradually the entire spine appears to be fitted with a calcified casing partially obliterating the individual bony structures. This is known as the "bamboo" spine. Ligamentous calcification is differentiated from hypertrophic degenerative lesions by the lack of osteophytes in the former condition, and by location; degenerative spurs arise from the margins of the vertebrae and are contiguous with them, whereas ligamentous calcification appears to arise from the bodies of the vertebrae. All ligaments of the spine may be involved, including the ligamenta flava.

The differential diagnosis should not be difficult with the aid of roentgenograms. The lesions which may be confused most frequently with this condition are those of degenerative arthritis, metastatic cancer, Paget's disease and other types of rheumatoid arthritis.

During the last three years we at the Lahey Clinic have become more conscious of this disease, both clinically and roentgenologically, than previously, and have diagnosed more than 35 cases during this period. This is a larger group than had ever been diagnosed in the clinic prior to this time.

Radiation therapy was first described by Scott,[2] who reported on the successful treatment of over 150 cases in which follow-up studies were made for a period of three to five years. This treatment gave relief of pain and decreased the amount of stiffness that the patient presented. In cases in which the disease had progressed to calcification of the ligaments and obliteration of the apophyseal joints, clinical improvement occurred, but there were no roentgenologic changes to show decrease in the ligamentous calcification or changes in the sacroiliac or apophyseal joints.

It is difficult at best to evaluate therapy of this condition because of spontaneous remissions and exacerbations of the disease, because the disease may become inactive at any time, and because it progresses so slowly that one must depend on clinical findings and objective improvement.

Treatment consists of relieving pain and preventing deformities. Since there is no specific treatment of this condition, various methods have been used to relieve pain and to prevent and correct deformities.

Bed rest with the spine held in extension has been widely used. This procedure has been successful in relieving pain and preventing and correcting deformities, but because the disease is slowly progressive, continuing over a period of years, bed rest must be carried out over a long period during which there is gradual muscle-wasting, and rehabilitation of the patient to make him a useful citizen is a long-drawn-out process.

TABLE 1. *Summary of Data.*

Case No.	Age	Sex	Duration of Symptoms	Time Observed after Treatment	No. of X-Ray Treatments	Involvement	Sedimentation Rate		Vital Capacity		Chest Expansion		Weight		Foci of Chronic Infection		Symptoms and Findings	Results
							Before	After	Before	After	Before	After	Before	After	Location	Treatment		
	yr.		*yr.*	*mo.*			*mm.*	*mm.*	*cc.*	*cc.*	*in.*	*in.*	*lb.*	*lb.*				
1	24	M	4	20	12	Sacroiliac joints	1.90	1.40	3000	3800	1½	2¼	144	188	Tonsils		Pain + + + + Stiffness + + + + Limitation + + + +	Pain 0 Stiffness + + Limitation + +
2	31	M	11	13	10	Sacroiliac joints Lumbar spines Dorsal spines	0.60	0.75	1800	3000	½	1	171	185	Tonsils	Tonsillectomy and adenoidectomy	Pain + + + Stiffness + + + Limitation + + + +	Pain 0 Stiffness + + Limitation + +
3	42	M	12	9	6	Sacroiliac joints Lumbar spines Dorsal spines	0.84		1600	2400	½	2½	178	175	Sinuses	Drainage of both maxillary sinuses	Pain + + + Stiffness + + + Limitation + + + +	Pain + + + Stiffness + + + Limitation + +
4	23	M	3	14	15	Sacroiliac joints	0.95	0.91	2300	2600	1½	2½	123	127	None		Pain + + + Stiffness + + + Limitation + + + +	Pain + + + Stiffness + + + + Limitation + +
5	33	M	5	12	9	Sacroiliac joints Lumbar spines Dorsal spines	1.39		2000	2100	½	1	100	117	Tonsils		Pain + + + Stiffness + + + Limitation + + + +	Pain 0 Stiffness + + Limitation + +
6	21	M	4	12	12	Sacroiliac joints	0.72	0.54	2300	2900	½	2½	113	116	Tonsils		Pain + + Stiffness + + Limitation + + +	Pain 0 Stiffness + Limitation +
7	28	M	4	12	8	Sacroiliac joints Cervical spines	1.19	0.74	2500	2900	½	1	162	165	None		Pain + + + Stiffness + + Limitation + + + +	Pain 0 Stiffness + Limitation + +
8	30	M	8	11	7	Sacroiliac joints	0.20		4600	4800	2	2½	160	164	None		Pain + + + + Stiffness + + + Limitation + + +	Pain 0 Stiffness + Limitation +
9	34	M	1	9	7	Sacroiliac joints Dorsal spines	1.20		2300	2500	1	1	161	156	Tonsils	Tonsillectomy and adenoidectomy	Pain + + + + Stiffness + + Limitation + +	Pain 0 Stiffness + Limitation +
10	27	F	7	9	5	Sacroiliac joints Lumbar spines Dorsal spines	0.72		2000	2000	1¼	1½	132	132	None		Pain + + + + Stiffness + + + + Limitation + + + +	Pain 0 Stiffness + + Limitation + +
11	33	M	1	10	6	Sacroiliac joints	0.36		4000		2		151		None		Pain + + + + Stiffness + + + Limitation + +	Pain + + + Stiffness + + + Limitation + +
12	27	M	4	12	3	Sacroiliac joints Dorsal spines	0.11		3600	3500	2½			147	None		Pain + + + + Stiffness + Limitation +	Pain + + + + Stiffness + Limitation +
13	24	M	4	4		Sacroiliac joints	0.52		5000	5000	3	3	152	162	None		Pain + + Stiffness + Limitation +	Pain 0 Stiffness + Limitation 0
14	44	M	20	4		Entire spine Knees	1.10		2800	2800	1½	1½	138	140	Tonsils	Tonsillectomy and adenoidectomy	Pain + + + Stiffness + + + + Limitation + +	Pain 0 Stiffness + + + Limitation + +
15	25	M	2	12		Sacroiliac joints	0.28		5000	5000	3	3	165		Sinuses		Pain + + + Stiffness + + Limitation 0	Pain + + + Stiffness + + Limitation 0
16	26	M	4	5		Sacroiliac joints	0.80		3150	3500	1½	1½	153	162	Tonsils		Pain + + + Stiffness + + + + Limitation + +	Pain 0 Stiffness + Limitation +
17	29	M	12	4		Sacroiliac joints Spine	0.34		2300	2400			103	110	None		Pain + + + + Stiffness + + + + Limitation + + + +	Pain + Stiffness + + + + Limitation + + +
18	39	M	1½	7		Sacroiliac joints Spine	1.26		1500	1800	½	1½	127	121	None		Pain + + + + Stiffness + + + + Limitation + + + +	Pain 0 Stiffness + + + Limitation + + +
19	34	M	5	4		Sacroiliac joints	0.38		3000	3300	1½	2½	137	141	None		Pain + + + Stiffness + + + Limitation + +	Pain + Stiffness + + Limitation + +
20	32	F	5	10		Sacroiliac joints Spine	0.96	1.15	1800		1		116		None		Pain + + + Stiffness + + + Limitation + +	Pain + + Stiffness + + + Limitation + + +
21	34	M	6	7		Sacroiliac joints	0.36			3300	2	2½	160	168	None		Pain + + + Stiffness + +	Pain 0 Stiffness +

A modification of the above procedure, now advocated by Swaim,[5] consists of putting the patient to bed until relief is obtained, and then giving him a form-fitting jacket to wear. This has been successful in preventing deformities and, according to Swaim, largely relieves pain and prevents involvement of the peripheral joints.

Forestier[4] reports the successful use of intramuscular injections of gold salt and of weekly intramuscular injections of radon.

It has been my impression after treating a series of 35 patients with x-rays that relief of pain can be obtained in about 80 per cent of cases. The maximal number of treatments given to any one patient has been twenty. A patient whose course has been followed for two years received no treatment during the last year and has remained free of discomfort. Roentgen examination two years after the first treatment revealed progression of the disease evidenced by calcified bridging in the ligaments of the low lumbar spine. Probably the best test of the value of radiation treatment has been that 33 of the 35 patients are now able to work; this includes 5 patients who were formerly incapacitated. Nineteen of the 21 patients observed within a year have also returned to work.

Radiation therapy is directed to the entire spine, the sacroiliac joints, and the paravertebral and gluteal muscles. Only small doses of x-rays are required to give relief. At present I am using six portals of 300 sq. cm. each, treating one portal daily; a dose of 300 r is administered to each portal, using the following factors: 150-200 kv.; 20 milliamp.; filters, 0.25 to 0.5 mm. of copper and 1 mm. of aluminum; distance, 50 cm. (In the 2 young women whom I have treated, a maximum of 100 r has been used over the low-lumbar and sacroiliac regions in order not to injure the ovaries.) This series may be repeated again in three weeks if necessary, although usually only one or two areas will require further treatment, depending largely on the stage of the disease at the time treatment is undertaken.

Relief of pain may be noted during the first week, or two or three weeks following radiation treatment. In some cases it has been necessary to repeat the series in order to obtain relief. If occasional attacks of pain recur, they may usually be relieved by a single small dose of x-rays.

When relief of pain has been obtained it is advisable to refer the patient to the orthopedic surgeon for muscle-building exercises and for correction of the deformities that have already taken place. Muscle-rebuilding has been slow; only 2 patients in this series have returned to hard manual labor. The use of back braces or supports following radiation therapy has not been necessary.

Summary

The etiology of Marie–Strümpell arthritis is unknown. It is a disease of young adults; it is ten times more frequent in men than in women. The disease produces painful, progressive rigidity of the spine.

The clinical findings are pain, stiffness and limitation of motion of the spine.

Elevation of the sedimentation rate is a constant factor.

The diagnosis of this disease before rigidity of the spine has taken place may be made by roentgenograms, since the disease attacks the sacroiliac joints apparently before other portions of the spine, producing symmetrical changes of increased density and narrowing of the joints before calcification occurs in the ligaments.

Radiation therapy directed over the spine and the sacroiliac region will in most cases relieve pain and thereby prevent deformities, although the disease may continue to progress.

This condition varies from the usual form of arthritis in several ways:

It is a disease of young men, usually of the athletic type, a reversal of the usual sex ratio as compared with other types of rheumatoid arthritis.

Peripheral-joint involvement is infrequent.

Pathologic changes first appear in the sacroiliac articulations.

Calcification in ligaments, which does not occur in other forms of rheumatoid arthritis, is always present in the late stages.

Relief of pain is obtained by x-ray treatment.

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TUBERCULOUS TENOSYNOVITIS

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BOSTON

CASES of tuberculous tenosynovitis have been but rarely seen at the Massachusetts General Hospital during the last half-century. Thirty-six cases of the disease were found in a survey covering the last forty-five years. A disease which is seen only once in every 7891 admissions to a large metropolitan general hospital merits recurrent analysis, even though several excellent descriptions are extant.

The age decade most commonly affected is the third, but there is a wide age distribution. This is shown in Figure 1. The youngest patient was

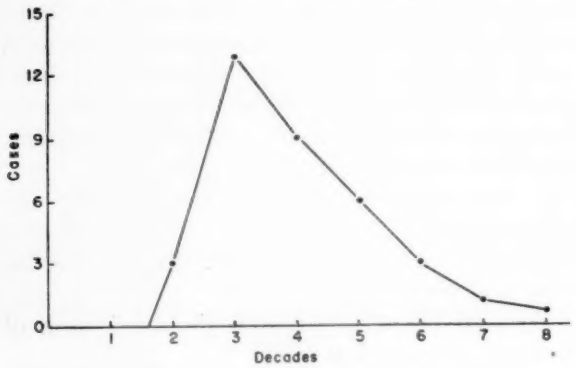

FIGURE 1.

fifteen years old, with symptoms of one and a half year's duration, and the oldest was seventy-five, with symptoms of three years' duration when first seen. The average age was thirty-six years. The median age was 33.5 years. There were 21 males and 15 females.

The right hand was involved in 22 cases: on the volar surface in 15, the dorsal surface in 6 and both surfaces in 1. Five of these patients were right-handed, 1 was left-handed, and in 16 cases no record was made. The left hand was involved in 14 cases: on the volar surface in 8, the dorsal surface in 5 and both surfaces in 1. One of these patients was right-handed, 2 were left-handed, and in 11 cases no record was made. Stated differently, the volar surface was involved twenty-five times, and the dorsal surface thirteen times. The influence of use on incidence is shown by the high occurrence of involvement in the right hand of right-handed patients, and by the fact that most people are right-handed.

The occupations varied widely. There were no laborers, but 30 patients made hard use of their hands. The others included 2 school children, 2 chauffeurs, 1 waiter and 1 fruit dealer. The influence of occupation is inconclusive, but hard use of the hand may be a predisposing factor.

The importance of a history of trauma is difficult to determine. Mild injuries to the hands of working people are so common and hand tuberculosis so rare that attempts at correlation are dangerous. Eight of the patients in this series complained of definite antecedent trauma.

The role of direct inoculation has often been mentioned. The present series furnishes little evidence in support of this method of infection. On the other hand, the reduced incidence in butchers with the decline of bovine tuberculosis and the tightening of pure food laws points to the possibility of direct inoculation. Two of the patients in this series were farmers, who milked cows regularly, and 1 was a skinner in the days before effective bovine control.

It is said that attendants of tuberculous patients are more susceptible than others to the disease, but there has been no case among the attendants of the Rutland State Sanatorium, one of the oldest tuberculosis institutions in the country.

Thirteen of the patients had tuberculosis elsewhere in the body. The lungs were involved four times, the neck twice, the intestines once, the bones of the hand once, the spine twice, the elbow twice and the bones of the foot once. Kanavel[1] has stated that tuberculosis of the tendon sheaths is a not uncommon complication of pulmonary tuberculosis. However, Dufault[2] reviewed the complete records of the Rutland State Sanatorium and was able to find only 2 cases. That the disease is frequently present without pulmonary infection is certain. There is no case in this series in which tuberculosis became generalized by extension from the tendon sheaths.

Diagnosis in the early stages may be difficult. The typical feature is a gradually developing, painless or slightly tender mass on the volar aspect of the hand. There is partial stiffness with inability completely to flex or to extend the fingers. Diminished strength on grasping is a common com-

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plaint. The presence of disease beneath the carpal ligament may cause mechanical pressure on the median nerve, with paresthesia over its peripheral distribution. One of the most valuable aids in making a diagnosis is the keeping of a four-hour temperature chart over a period of several days. A daily rise in temperature to 99.6 or 100.6°F. is suggestive of tuberculosis and should lead to further study. Suspected cases should of course be splinted from the beginning.

Finger motion may cause creaking or grating sounds in the later stages of the disease, because of the accumulation of degenerated fibrinous deposits within the tendon sheath — so-called "rice bodies." Rice bodies and two-way fluctuation beneath the annular ligament usually mean a burned-out lesion. Joint stiffness and a fluctuant mass often indicate bone disease, which may be proved by x-ray demonstration of destruction of the carpus.

The diagnosis was proved pathologically in 27 of the cases and established beyond a reasonable clinical doubt in the remaining 9. The diagnosis of tuberculous tenosynovitis in this hospital for the past forty-five years has been equivalent to the recommendation of operation; this is proved by the fact that 33 of the 36 patients were so treated. Only two types of operation were performed: incision and drainage of fluctuant masses in 9 cases, and resection of the involved tendon sheaths in 24. Thickened, granular, grayish sheaths, filled with fibrinous concretions (rice bodies), gelatinous material and edematous granulation tissue, are characteristic. In some cases, however, prolonged study of the pathologic material proved necessary before a positive diagnosis of tuberculosis could be established. Guinea-pig inoculation was sometimes helpful.

Follow-up notes are available in 26 of the 36 cases, and in 23 of the 33 operated cases. Six of the latter had drainage procedures, 2 with curettage; 4 failed to improve, 1 was improved, and 1 had repeated small incisions and drainage for three years, with a perfect result at the end of five years. Seventeen patients had excision of the tendon sheaths; 7 were clinically cured. The shortest follow-up period was one year, and the longest sixteen years. The 10 patients in whom arrest failed to be secured by excision continued to suffer from the disease. Seven had relief of symptoms and were clinically improved after operation, although active disease persisted; the others were unimproved or worse as a result of operation.

Two of the 3 patients who were not operated on recovered completely and resumed their work.

The third is unimproved and suffers also from pulmonary tuberculosis.

The results in the 23 operated cases in relation to the duration of disease at the time of operation are shown in Table 1. It should be noted that the best results were obtained when operation was performed during the second or third year of the disease.

TABLE 1. *Results in 23 Operated Cases.*

Duration of Disease at Time of Operation	Unimproved Cases	Improved Cases	Arrested Cases
yr.			
1 or less	3	0	0
2	0	3	5
3	1	3	0
4	0	2	2
4 and over	3	0	1
Totals	7	8	8

Discussion

These results are none too good. It is striking that tuberculosis, a disease often considered a contraindication to necessary surgical procedures, should have been so avidly attacked when manifested in the tendon sheaths. No other tuberculous condition, with the possible exception of tuberculous lymph nodes of the neck, has been subjected to surgery with such casualness and lack of accessory data.

As is well known, tuberculosis is a generalized disease, and any clinically recognized focus is likely to be paralleled by similar infection elsewhere in the body. A thorough search for such foci is mandatory to the careful clinician. The treatment of tuberculosis of one organ without even awareness of its presence in other organs is obviously a futile procedure.

Furthermore, tuberculosis of the tendon sheaths should receive the same systemic treatment accorded to tuberculosis of the lungs or spine.[3] Thoracic surgeons have learned well the value of preliminary sanatorium care; in fact, it is impossible for a tuberculous patient to enter the Massachusetts General Hospital for thoracoplasty unless he has already followed a sanatorium type of regimen. This policy was engendered by many early failures, and remarkably better results have proved its wisdom.

From another viewpoint, surgical attack on a tuberculous focus such as a tendon sheath without knowledge of how the lesion is progressing involves the likelihood of operating in the presence of advancing or exudative disease. This may result in a failure for the surgeon and increased disability for the patient. Knowledge of progression or regression can be gained only by periodic observation, and during this time treatment in the form of splint immobilization and sanatorium type of care should be given.

Again, it is axiomatic that the tuberculous patient must demonstrate resistance and an ability to localize infection before surgical attack is directed on a focal lesion. Attempts at extirpation under other circumstances constitute meddlesome surgery. The fundamental principles governing the treatment of tuberculosis must be followed in tuberculosis of the tendon sheaths as elsewhere,* else the response will be dissemination of the disease.

The drainage procedures which may prove necessary for abscesses about the hand, in order to relieve mechanical pressure, often bring relief of symptoms, but rarely result in arrest of the disease, because the active focus remains. Kanavel[1] has stated that complete removal of tuberculous tendon sheaths or tuberculous tendons will effect a cure. He insisted that every vestige of tuberculous tissue must be removed. If true, this means that one must wait before performing excision until the exudative phase is over and the fibrotic phase is well under way. The task is certainly impossible at any earlier stage. The judgment of this master of the hand was undoubtedly reflected in his ability to select the proper time for operation.

*Renal tuberculosis is to some extent an exception, in that it does not tend to undergo encapsulation and regression.

The best surgical results at the Massachusetts General Hospital have been obtained in cases where the hand has been disabled by the sequelae of an infection that has become quiescent, that is, by fibrosis of tendon sheaths, adherent tendons and rice bodies. Six of the 10 arrested cases were of this type.

Too few of these cases received conservative rest treatment to permit statistical analysis. There is every reason to believe, however, that this form of therapy should more commonly be the primary part of the therapeutic program.

Summary

The diagnostic features and results of treatment for all cases of tuberculous tenosynovitis encountered during the past forty-seven years in a large general hospital are analyzed.

Some principles of tuberculosis therapy are discussed, as specifically applicable to tendon-sheath disease.

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CLINICAL AND ELECTROENCEPHALOGRAPHIC CHANGES PRODUCED BY A SENSITIVE CAROTID SINUS OF THE CEREBRAL TYPE*

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BOSTON

Unconsciousness produced by the direct effect of afferent impulses from the carotid sinus on the brain was first reported by Weiss and Baker[1] and its mechanisms first studied by Ferris, Capps and Weiss.[2] These authors reported that in certain subjects syncope was produced by pressure on the carotid sinus, without changes in heart rate or blood pressure and with no demonstrable decrease in cerebral blood flow. They called this the cerebral type of carotid-sinus response, and believed that the afferent impulses affected certain centers in the brain, or produced local changes in the circulation of these centers, in such a way that unconsciousness resulted.

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In many cases it is difficult to determine whether the syncope is due to a sensitive carotid sinus of the cerebral type or is of psychogenic origin. Therefore, a subject was studied in whom attacks were produced by external pressure on the sensitive carotid sinus, by stimulation of the carotid sinus through the intravenous injection of sodium cyanide, and by hyperventilation. Electroencephalograms were taken at rest and during attacks induced by each of the three methods. The sensitive carotid sinus was novocainized, and the procedures were repeated. An operation was then performed in which the right carotid sinus was denervated, and subsequent to this, electroencephalograms were repeated at rest, following the injection of cyanide and during hyperventilation.

Case Report

The patient, a 36-year-old female hospital attendant, was admitted to the Peter Bent Brigham Hospital on November 10, 1939, complaining of fainting spells and migraine. Her mother and a maternal aunt had experienced fainting spells; another aunt had had migraine. From the age of 12 the patient had had attacks of migraine with typical scotomas, paresthesias of the right hand, arm, shoulder and face, thickness of the tongue and unilateral headache. These symptoms recurred every four to eight weeks for a number of years, but more recently they had occurred irregularly.

At the age of ten the patient had fainting spells in school, lasting for a few minutes and characterized by weakness, light-headedness and mental confusion. There were no tonic or clonic components. She had 6 to 8 attacks in the year following onset. They recurred at the age of 22 and were characterized by sensations of heat, pain and expansion of the right side of the head; the patient felt faint, slumped to the floor and was confused. With recovery from the spells the patient experienced sensations of heat and cold all over the body, without sweating. The confusion lasted from a few minutes to several hours, usually accompanied by anxiety and apprehension. These episodes recurred at irregular intervals. At the age of 24, during pregnancy, she experienced one attack every 7 to 10 days. In the following year she had one attack, and when 28 she had a series of them. No more occurred until she reached the age of 36, when their character changed. In addition to the symptoms previously noted, there was numbness of the right side of the face and neck, fullness of the neck, hoarseness and stridor. During three months there were 2 attacks, the latter of which necessitated her admission to the hospital, where the attacks increased in frequency to as many as 5 in a day.

Most of the seizures occurred in the daytime. There was no relation to meals or to posture. On a few occasions the patient awoke feeling dyspneic, confused and with a sensation of numbness, pain and heat over the right side of the face.

In addition, the patient always had poor postural adaptation. She became weak and dizzy if she stood for long periods of time, and had postural fainting on a few occasions. While in the upright position she frequently noticed palpitation.

Physical, neurological and laboratory examinations revealed no significant findings. The blood pressure was 100/70. The fasting blood sugar on four occasions ranged from 70 to 85 mg. per 100 cc. The heart was normal. There was no evidence of arteriosclerosis. The neck was supple and free of any masses or scars. The right carotid bulb was larger than the left. Pressure over the right carotid sinus produced attacks similar in character to those occurring spontaneously, although of shorter duration. Pressure on the left carotid sinus at times produced a sensation of weakness.

After a series of investigative procedures had been carried out, the right carotid bulb was denervated surgically by Dr. Elliott C. Cutler on December 5. The arteries were separated from the surrounding sheath, and the outer coat was blown away with salt solution introduced through a fine needle. The adventitia was then divided longitudinally and peeled off on both sides. The common carotid artery was denuded of its outer coat for 3 cm. below the bifurcation. Both external and internal carotid arteries were denuded of their outer coats for 2 cm. above the bifurcation. Great care was taken to remove completely the outer coats in the crotch at the bifurcation. Since operation the patient has been entirely well and pressure on the right carotid sinus has produced no attacks. She was last seen on October 9, 1940.

Investigations

Effect of External Pressure on the Right Carotid Sinus

Firm pressure on the right carotid bulb caused the patient's head to fall back limply. Her face became pale, the voice husky, and she developed stridor. At times, further pressure produced loss of consciousness, tremor in the right hand and twitching of the muscles of the right side of the face. After release of the pressure the patient remained confused for about a minute. The attacks usually occurred without a fall in blood pressure or a change in heart rate. After novocainization, and after surgical denervation, external pressure on the right carotid bulb produced no symptoms or signs of attack.

Effect of Intravenous Injection of Sodium Cyanide

Sodium cyanide is known to stimulate the chemoreceptors in the carotid sinus.[3] An injection of 0.04 cc. of a 2 per cent solution of sodium cyanide was made into the left antecubital vein, with the left hand immersed in water at 39°C. Injections of physiological salt solution were used for controls. Since the needle was left in the vein during the entire procedure, the patient did not know what was injected or when the injection took place. She had previously been given intravenous saline injections, which had produced no symptoms. Fifteen to twenty seconds after the injection of sodium cyanide her head felt as if it were enlarging. Respirations gradually increased in depth, reaching their maximum in thirty to forty seconds after the injection. At that time the patient did not respond to questions and at the end of three minutes she still appeared somewhat dazed. Mental work was performed with effort. There was no change in pulse or blood pressure. At the end of fifteen minutes a second injection of 0.04 cc. of sodium cyanide was made. The respiratory response occurred in thirty seconds. The patient became restless, her mouth felt dry, and she was confused. When the right carotid sinus was novocainized the injection of 0.08 cc. of sodium cyanide produced no symptoms. The effect of a larger amount was not determined.

After operation the patient showed no response to intravenous injections of 0.05, 0.10, 0.15 and 0.20 cc. of sodium cyanide. The injection of 0.30 cc. caused deepening of respirations at 28 seconds, flushing of the face and drowsiness; her emotional reactions were normal, and she was not confused.

Effect of Overventilation

While in the recumbent position, the patient was instructed to breathe deeply and rapidly. This overventilation was continued for a period of six minutes, during which time she was visibly distressed and had to be encouraged to continue. She became confused but not unconscious; her face was cyanotic and the facial veins were prominent; there was tremor of the right hand and arm, quivering of the face, and retching. She sat up, sobbed, trembled, and when able to speak said, "My head feels as if it is flying out into space — it's a horrible feeling. My feet feel cold." Later her feet felt hot. The procedure was repeated a number of times with similar results. The patient remarked that the phenomena provoked by hyperventilation duplicated those portions of her spontaneous attacks that she was able to remember.

After novocainization of the carotid sinus the procedure was repeated. On several occasions overventilation was performed for one to fifteen minutes but none of the above symptoms occurred. There was numbness, tingling, and stiffness of the face, fingers and toes. Chvostek's sign and carpopedal spasms were present. These signs and symptoms were interpreted as indicative of respiratory tetany.

Following denervation, overventilation produced no attacks, and if continued long enough produced signs and symptoms of respiratory tetany.

Effect of Motionless Standing

After resting in the horizontal position for thirty minutes the patient was tilted upright to an angle of 75°. The weight of the body was supported by the feet. The heart rate increased from 70 to 115 beats per minute. The blood pressure fell from 110 systolic, 80 diastolic to 95 systolic, 70 diastolic. At the end of ten minutes she became weak and faint, and on one occasion lost consciousness.

After denervation the patient could stand motionless without developing palpitation and lightheadedness. The resting blood pressure was 110 systolic, 84 diastolic, and the heart rate 68. The tilting experiment was repeated. After the patient had stood motionless for fifteen minutes at an angle of 75° the blood pressure was 100 systolic, 70 diastolic, and the heart rate 64. She developed no symptoms of an attack.

*Electroencephalograms before Operation**

At rest. Electroencephalograms with the 8 standard leads showed various gross abnormalities. There were many low-voltage, fast (15-to-40-per-second) waves, few or no slow (10-per-second) waves, and occasional runs of square (4-to-6-second) waves. Such abnormalities are seen most frequently during epileptic seizures of the psychomotor and grand-mal types. The records of this patient were therefore interpreted as showing a combination of psychomotor and grand-mal disorders. Analysis of the records by the Grass frequency analyzer[4] showed a very definite peculiarity. There was much more energy in the fast frequencies than is the case in normal subjects, and instead of showing the narrow peaks at 5, 9½, 28½, 33½ and 43 per second, which are seen in normal subjects, this patient showed wide peaks at 6 per second and multiples of 6 up to 60.

During attacks induced by pressure on the right carotid sinus, by injection of sodium cyanide or by hyperventilation. When seizures were produced by pressure on the right carotid sinus, by the injection of sodium cyanide or by hyperventilation, a definite increase in the abnormalities in the resting record was noted. These changes were essentially the same, regardless of the method employed to precipitate an attack.

The changes in the unanalyzed record appeared to be chiefly an increase in fast activity, but they were not definite enough to be interpreted with certainty. The analyzed records, however, showed that the attacks were associated with a distinct increase in the amount of fast activity. The change was most apparent in the 10-to-25-per-second band. From the electroencephalograms it appears that the patient's attacks were characterized by a shift in cortical activity that is comparable to, but not so extensive as, that seen in association with grand-mal seizures.

After novocainization of the right carotid sinus. Immediately after the right carotid sinus had been novocainized, the abnormal appearance of the resting analyzed record was accentuated. The tendency for broad peaks to occur at 6 per second and intervals of 6 appeared to be more marked than it was before novocainization. However, after ten to fifteen minutes the record became more normal than the pre-novocainized resting record. After novocainization the three procedures that had previously provoked seizures no longer produced a clearly demonstrable increase in fast activity. In one instance the injection of cyanide resulted in a slight increase in fast activity, but this was not comparable to the change that it produced before novocainization. These observations correlate well with the fact that none of the procedures produced seizures after novocainization.

*We are indebted to Dr. Frederic Gibbs, of the Neurological Unit, Boston City Hospital, for the electroencephalographic studies and for the interpretation of the electroencephalograms. The electrical activity of the brain associated with the carotid-sinus reflex is under investigation in his laboratory and later will be the subject of a more extensive report.

Electroencephalograms after Operation

Records were taken from the eight standard leads. The analysis of resting records taken on December 20, 1939, and February 29, 1940, showed that they were much more normal than before operation, although certain minor abnormalities persisted. There was no longer a tendency for the activity to clump in peaks at intervals of 6 per second. The right frontal and right occipital leads showed strong peaks at 11½ per second, which had not been present before operation. Clinical attacks could not be produced by the injection of cyanide or by hyperventilation. During these procedures the pronounced increase in fast activity that had occurred before the operation was not seen.

Preoperatively, hyperventilation had produced in the period before the onset of the seizure a more marked slowing of cortical activity than is usually seen in normal subjects. After operation this slowing with hyperventilation was less marked, and therefore normal.

Discussion

Weiss and Baker[1] report that convulsions and temporary loss of consciousness can occur without significant changes in the blood pressure or heart rate. Because of the accompanying facial pallor and the fact that the vascular reaction of the facial vessels and meninges are qualitatively alike, they suggest that the cerebral manifestations are the result of vasoconstriction in the brain. Further investigation[2, 5] revealed that there was no demonstrable cerebral anoxemia during these induced attacks. Moreover, the onset of unconsciousness was more rapid in such cases than in other types of syncope known to be associated with decreased cerebral blood flow.[2] It was concluded, therefore, that the unconscious state was induced either by the direct action of afferent impulses from the carotid sinus on certain centers in the brain, or by the selective constriction of the vessels supplying these centers. The case described here illustrates this cerebral type of carotid-sinus syncope. The attacks induced by pressure on the right carotid bulb usually occurred without a fall in blood pressure or a change in heart rate. The electroencephalograms of the patient during either spontaneous or induced attacks differed from those which are characteristic of anoxemia. This is further evidence that the seizures were caused by a neurological mechanism.[6]

The carotid sinus contains receptors that are sensitive to changes in the endosinal pressure, and receptors that are stimulated chemically by carbon dioxide, by anoxemia[7] and by such drugs as sodium cyanide.[3, 7] In our case, attacks were precipitated by chemical as well as physical stimuli. The intravenous injection of an amount of sodium cyanide which would produce no symptoms in a normal subject caused a seizure. A case with a sensitive carotid sinus of the cerebral type in which the injection of sodium cyanide produced symptoms of faintness has been reported.[2]

Hyperventilation produced seizures in our patient. The abnormal carotid sinus must have been responsible for the seizures from hyperventilation, since such attacks were not produced postoperatively. Experiments on animals have shown that the alkalosis caused by hyperventilation depresses the activity of the chemoreceptors in the carotid sinus.[7] Therefore it is unlikely that hyperventilation stimulated the abnormal carotid sinus in our patient. Hyperventilation reduces the blood flow in the human brain.[8] It thus appears that the combination of decreased flow of cerebral blood from hyperventilation and the afferent impulses from the abnormal carotid sinus was sufficient to cause a seizure. When the latter were inhibited by novocainization or denervation, hyperventilation did not cause an attack. Similarly, the syncope with the patient in the upright position may be explained by the effect of an abnormal carotid sinus on a brain in which the blood flow was reduced by gravity.

Because of the family history of fainting attacks, the history of migraine and the abnormal electroencephalograms, it was assumed that this patient had idiopathic epilepsy, and that the right carotid sinus served as a trigger mechanism to produce attacks in a brain that was already abnormal. The fact that the production of seizures by stimulation of the carotid sinus was followed by even more abnormalities than were present in the resting state supported this explanation. Further study showed that the right carotid sinus must have been responsible for most of the abnormally fast activity seen in the analyzed electroencephalograms, since the fast activity decreased after novocainization and denervation. This suggested the possibility that in this case the abnormal carotid sinus was the primary mechanism, and that as a result of prolonged hyperactivity it had produced permanent minor changes in the brain. The data needed to decide this point are not available.

The evidence that afferent impulses from a peripheral receptor organ may exert a continual influence on cerebral activity, and that this influence can be removed by denervation of the peripheral receptor, is of fundamental importance. The extent to which the normal carotid sinuses

influence the normal human brain is unknown. It has been reported that in normal animals there are continuous afferent stimuli which arise from the pressor[9] and chemoreceptors[7] in the carotid sinus. Hering[10] believes that these stimuli are essential for maintaining the tone of the autonomic nerve centers.

The cause of idiopathic epilepsy is obscure. It has been reported that the disease is associated with a paroxysmal cerebral dysrhythmia,[11] and that in the majority of cases a sensitive carotid sinus has played no part in causing the symptoms. In certain epileptic patients it may act as a trigger mechanism and initiate seizures. In this patient it appears that the sensitive carotid sinus was of primary importance, not only in precipitating attacks but also in modifying the brain waves between attacks. Even though such cases may be extremely rare, they should be searched for carefully, because relief of symptoms may be obtained by a relatively simple surgical procedure.

Summary

Studies of a patient with migraine, atypical epilepsy and a sensitive right carotid sinus of the cerebral type are presented. These atypical epileptic attacks were induced experimentally by external pressure on the sensitive carotid sinus, by intravenous injection of sodium cyanide and by overventilation.

Following novocainization of the sensitive carotid sinus, and its surgical denervation, attacks were not produced by the procedures listed above. There have been no spontaneous attacks since operation.

Electroencephalographic studies in the resting state before operation showed changes compatible with psychomotor and grand-mal epilepsy. After operation the electroencephalographic record revealed a decrease in this abnormality. Electroencephalographic studies during attacks induced by external pressure, by cyanide or by overventilation caused an increase in the abnormal activity noted at rest.

The evidence indicates that in this case a sensitive carotid-sinus mechanism of the cerebral type played a significant role in the clinical seizures and in the production of the abnormalities observed in the electroencephalograms. The changes in the latter were not those of anoxemia.

These studies furnish further evidence that a peripheral autonomic receptor organ, that is, the carotid sinus, can produce seizures by the direct effect of afferent impulses on the brain.

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NONTRAUMATIC DISLOCATION OF THE ATLANTOAXIAL JOINT*

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A CASE of unilateral dislocation of the atlas on the axis, unassociated with or related to injury, is presented. This is a rare type of dislocation, and the case reported herein is interesting because it demonstrates the ease with which the diagnosis may be overlooked for a long period. It also reaffirms the importance of proper x-ray studies, particularly an anteroposterior view through the mouth, in establishing the diagnosis. The case is of further interest because it establishes the fact that a rather long period during which the diagnosis may be overlooked does not necessarily prevent a satisfactory and lasting reduction of the dislocation.

Nontraumatic dislocation of the atlas on the axis has been recognized and described for many years. Corner[1] in 1907, in describing rotatory dislocation, suggested that it could be produced by trauma so slight as to be negligible. The mechanism of the production of such a dislocation is best understood by a brief consideration of the anatomy of the atlantoaxial joint.

ANATOMY

The lateral joint surfaces between the atlas and axis are oval-shaped and essentially plane, with their surfaces directed slightly downward, forward and outward. Each joint has a loose capsular ligament and a synovial sac. The ligaments are strengthened in front and behind by the anterior and posterior atlantoaxoidean ligaments. The transverse ligament is a strong, tightly woven fibrous band that passes across the large central opening in the arch of the atlas and divides it into a small anterior portion, through which the odontoid process projects, and a large posterior part, which is the upper continuation of the spinal canal, and which transmits the spinal cord, its membranes and the spinal portion of the associated spinal nerves.

Motion between the atlas and axis is mainly rotation, whereas that between the head and the atlas is flexion in the sagittal direction with slight lateral motion. Anterior dislocation of the atlas on the axis can occur with rupture or relaxation of the transverse ligament. Obviously, there can be no rupture of the transverse ligament unless there is severe trauma. Consequently in the nontraumatic variety one is probably dealing with a relaxation of the transverse ligament. The vast majority of nontraumatic dislocations are forward and anterior with some degree of rotation. Berkheiser and Seidler[2] have suggested that the anterior type predominates because the center of gravity of the head is farther forward than the anatomic support.

ETIOLOGY

Fairly constant in these clinical pictures is a preexisting infection of a type that can produce a hyperemia at the base of the skull, such as tonsillitis, pharyngitis, adenitis and mastoiditis. As to the mechanism by which the focus effects such a relaxation, there is a difference of opinion. Wittek[3] believed that the effusion might develop between the odontoid process and the anterior arch of the atlas, and between the odontoid process and the transverse ligament of the atlas, with resulting softening and stretching and relaxation of the transverse ligament. Jacobs[4] suggested that the atloaxoid articulation might become distended and result in spontaneous dislocations. He compared it with the pathologic dislocations of the hip joint seen in typhoid fever and, agreeing with Wittek,[3] termed it a distention luxation of the joint. Greig[5] in 1931 published the results of his investigations on the effect of hyperemia on bones, and established the fact that hyperemia may produce decalcification.

Watson-Jones[6] and Jones[7] believe that the hyperemia produces a decalcification of the anterior and lateral part of the ring of the atlas, with softening and loosening of the attachment of the transverse ligament. Such a theory is favored by the fact that this condition occurs so frequently following an acute infection of a type that can produce hyperemia in the region of the base of the skull, and is further favored by the fact that such atlantoaxial dislocations occur mostly in young children whose bones are very vascular. As a result of relaxation of the transverse ligament or capsular ligaments of the articulations, with a normal movement the articular facet of the atlas may slip over the anterior marginal lip of the facet of the axis, producing a forward dislocation.

CLINICAL FEATURES

The usual history is that following an acute tonsillitis, pharyngitis, adenitis or similar infection,

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a painful, stiff neck developed. The head is held rigid, slightly ahead of its normal plane; the occiput is rotated toward the shoulder on the side of the dislocation, and the chin is held close to the neck and rotated to the other side. It is the ordinary position of a wry neck, without, however, any spasm of the sternocleidomastoid muscles. There is impairment of rotatory motion of the head on the neck. The mouth cannot be opened actively or passively beyond a very limited extent. A reduction in the size of the posterior nasopharynx, due to the projecting anterior arch of the atlas, is present and can be determined by palpation through the mouth. The transverse process of the atlas is not palpated in its usual position on the side where the transverse process is displaced backward. The head is tilted toward the side on which the atlas has been dislocated forward. The spine of the second cervical vertebra can be palpated on the opposite side. Rarely, there may be neurologic signs. The patient tends to support the chin in his cupped hand.

Watson-Jones[6] in his first case demonstrated that half the anterior arch of the atlas had disappeared. He stated that if it were not for later x-ray photographs, one might suspect a congenital anomaly or bony destruction due to disease. Subsequent x-ray films showed the arch again united, so that Watson-Jones concluded that the defect was caused by decalcification. Accordingly, this defect in the arch due to decalcification must be sought for in the x-ray film. In addition, one must look for the other x-ray signs, which may be difficult to demonstrate; because of the position of the lesion and the sensitiveness of the neck painstaking efforts are usually necessary to secure adequate pictures. A correct lateral view will show the atlas held forward in an altered position. An anteroposterior view taken through the mouth will show a narrowing or obliteration of the joint through the facets and an eccentric odontoid process. This view similarly is hard to obtain because the patient may have difficulty in opening the mouth sufficiently.

Treatment

Early cases that are not very severe usually respond to traction with a Sayre sling in the recumbent position on a slightly hyperextended frame. The reduction may be prompt or prolonged. Following reduction, which must be checked not only by the physical but by x-ray examination, a plaster-of-Paris cuirass with the head extended is applied. More resistant cases may necessitate the use of anesthesia and manipulation for the purpose of reduction. The method first described by Walton[8] is still perfectly satisfactory. Briefly, the maneuver consists of freeing the dislocated articular facet of the upper vertebra by lifting it free in the flexed position, and then rotating it into place by dorsolateral flexion, followed by rotation. The patients in whom reduction is impossible because the dislocation has been unrecognized for a long period may accommodate themselves to the changes without any particular harm, although they are prone to sudden severe accidents and the development of a myelitis at some later date. Operative intervention has been described for old unreduced cases of atloaxial dislocation. Mixter and Osgood[9] describe such an operative procedure.

Following successful reduction checked by satisfactory x-ray films, immobilization in plaster of Paris for a period of four to six months is advised. This should be followed by the use of a Thomas collar for an additional two to four months. Following this, physiotherapy and graded exercises are instituted.

Case Report

L. P., a 7-year-old schoolboy, was admitted to the Cambridge Hospital on January 15, 1936, because of an upper-respiratory infection, cervical adenitis and functional torticollis of 1 month's duration. He had been apparently well up to January 1, 1936, at which time he had a severe "head cold," followed by cervical adenitis. He had had tonsillitis repeatedly during the last several years. For the 3 weeks prior to admission he had received heat locally, without much improvement. The past history was essentially non-contributory.

Physical examination showed a well-developed and fairly well-nourished boy whose head was tilted to the left and flexed in the forward position. The trapezius muscle on the right side was hard and taut. There was a chain of enlarged lymph nodes in the right posteroauricular and cervical regions. The tonsils were cryptic and somewhat enlarged. The rest of the examination was negative. A preliminary diagnosis was made of cervical adenitis, possible tuberculosis and functional torticollis.

X-ray films taken in the usual manner were interpreted as negative. No view through the mouth was taken, and the lateral view was unsatisfactory because of the difficulty in securing it with the head in its position of torticollis. The patient was seen in consultation by a member of the Nose and Throat Service, who recommended tonsillectomy and adenoidectomy. This operation was performed on February 7, and the patient was discharged relieved on February 12. The day after discharge the head was in the same position that it had been on admission, that is, tilted to the left with the chin held down and toward the right. The patient was shortly thereafter taken to the outpatient department of another hospital, and was there referred from the pediatric clinic to the orthopedic clinic. X-ray photographs revealed "possible fracture of the first cervical vertebra, with displacement laterally to the left, and possible fracture, compression type, of the third cervical vertebra." It was noted that there had been no history of trauma. On March 6 the patient was admitted to that hospital. Physical examination revealed

a child who was poorly nourished, and whose head was bent to the left. He was unable to move his head because of rigidity. He could not make a sudden move in any direction, and the neck was splinted by muscle spasm. The patient was put in head traction (5 pounds). On March 22 he was able to move his head within a wide range, and on March 27 could move his head in all directions. On March 30 the head traction was removed and the patient was still able to rotate his head in all directions. On April 4 some of the limitation returned shortly after the patient was allowed to get up. The head and neck were placed in a plaster cast of the cuirass variety, and the patient was discharged home.

The cast was kept on until May 12, at which time infrared therapy, massage and exercises were instituted. An attempt was made to carry out traction at home, but this proved unsatisfactory.

On June 3 the patient returned to the Orthopedic Department of the Out-Patient Department of the Cambridge Hospital. Physical examination showed the same type of torticollis that was present at the original admis-

FIGURE 1. *Lateral View.*
There is anterior displacement of the atlas on the axis.

sion. X-ray photographs were again taken, but failed to disclose the cause of the deformity. The patient was discharged and referred to the Physiotherapy Department. On July 22, examination in the Out-Patient Department still showed torticollis, but it was less marked. A group of lymph nodes were discovered at the lower right occiput, and it was thought that this condition might be a factor in the persistence of the torticollis. Compresses were advised, and finally on September 9, after much technical difficulty in securing x-ray films of the cervical spine, lateral and anteroposterior views through the mouth showed an anterior displacement of the atlas on the axis, with forward displacement of the articular facet on the left (Figs. 1 and 2). No evidence of fracture could be discovered.

The patient was readmitted to the Cambridge Hospital on September 20 and was put in head traction (4 pounds). This produced no change in the condition of the neck, and x-ray films revealed no change from those taken on September 9. On October 5, with the patient under general anesthesia, the dislocation was reduced. The method employed was further flexion of the head onto the chest, and lifting up, extending and rotating the head to the right and the chin to the left. A click was felt during the procedure, and post-reduction x-ray examination showed complete reduction of the dislocation. A plaster cast was applied to the head and cervical spine, in slight hyperextension, the cast extending down over the trunk to enclose the pelvis. X-ray examination on October 9

FIGURE 2. *Anteroposterior View through the Mouth.*
This shows obliteration of the articular joint space on the left side, due to slipping forward of the articular facet of the atlas on the axis. Note the eccentric position of the odontoid process.

showed good position and alignment. The patient was discharged home on October 11, and was followed in the Out-Patient Department. The cast was kept on until

FIGURE 3. *Lateral View.*
The dislocation of the atlas on the axis has been reduced.

January 29, 1937, at which time it was removed and a Thomas collar was applied.

X-ray examination on February 17 showed that the position and alignment of the cervical spine were still good (Figs. 3 and 4). There was still a good deal of stiffness of the cervical spine, for which physiotherapy and graded exercises were begun. On June 2 the patient was completely well, except for a tendency to carry the head

slightly forward. The Thomas collar was discarded late in June. The patient spent the summer at Children's Island, a convalescent home for children, but had to be sent home because of behavior problems. The superintendent wrote that he turned somersaults by putting his head on the ground, then throwing himself over. The patient was seen frequently, and on November 3 he had complete and normal motion, but there was still a tendency to tilt the head slightly. He was last seen on November 8, 1939, at which time his family stated that he had had no recurrence of pain, stiffness or deformity of the neck. Physical examination was completely negative. The head was held erect in the proper position, and all motions were complete and painless.

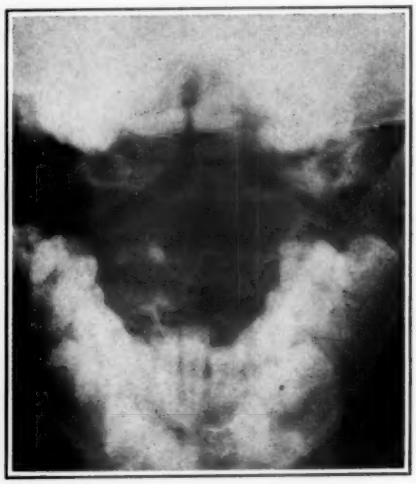

FIGURE 4. *Anteroposterior View through the Mouth. This demonstrates the restoration of the interarticular joint space on the left. The odontoid process has been replaced in its usual mid-line position.*

CONCLUSION

A case of spontaneous dislocation of the atlantoaxial joint is presented.

It emphasizes the fact that an atlantoaxial dislocation must be thought of in the examination of any torticollis that occurs in a patient who also has infection in the cervical region or its vicinity. It also demonstrates that it is difficult to obtain satisfactory x-ray photographs of the cervical spine when there is a torticollis, and that such exposures must be judged unsatisfactory for the detection of this disorder, unless in the lateral view the first and second cervical vertebrae are outlined satisfactorily, and unless one can secure a satisfactory view of the same area through the mouth.

It is important to note that long delay in making a diagnosis does not render impossible a satisfactory reduction. In this case the dislocation had existed for almost ten months before it was satisfactorily reduced by manipulation under anesthesia. The reduction has persisted for an interval of three and a half years.

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REPORT ON MEDICAL PROGRESS

SOME EPIDEMIOLOGICAL CONSIDERATIONS OF DIPHTHERIA

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BOSTON

THE presence or absence of diphtheria in any community depends on three factors: the host, the *Corynebacterium diphtheriae* and the environment. The epidemiology of diphtheria is the study of the interrelation of these three, of the variations of one and the resulting effects on the others. The control of diphtheria is largely dependent on the understanding of these phenomena and the institution of measures to bring about conditions more favorable for the limitation of the disease.

NATURAL IMMUNITY

Diphtheria is a struggle of survival between the infecting organism, *C. diphtheriae,* and the infected host, man. If both are to survive, the host and the parasite must reach an equilibrium; otherwise, either man overcomes the *C. diphtheriae* and thereby destroys it, or the parasite kills man and in turn deprives itself of a means of survival. The history of diphtheria is an account of this struggle of survival, which is not a static but an active and progressive phenomenon. The ideal state for both man and *C. diphtheriae* is reached when a state of symbiosis develops in which the parasite can continue to live in the throat without serious injury to the host. This symbiotic or carrier stage results only after prolonged adjustments between the host and the parasite and involves changes in one or the other or both.

The changes in the host are not only in the individual but in the entire population or community. Generally, resistance of the host depends on two factors, natural and acquired immunity. The host inherits through his genetic constitution a certain capacity of resistance or ability to develop immunity. In addition to the universal race immunity, there is individual variation, depending on the immunizability inherited from the host's parents. Through environmental contact this immunizability can be developed into acquired immunity. Immunity to diphtheria can be acquired by contact with *C. diphtheriae.* The titer of the diphtheria antibodies depends in part on the constitutional capacity to produce and maintain the titer. Contact between the host and diphtheria bacilli may result in a carrier state or in a subclinical or unrecognized infection of the host. The immunity in a population acquired by these experiences is termed latent. Usually, this latent resistance of a community is characteristic and varies from one community to another, depending on its experience with *C. diphtheriae.* In the newborn, temporary passive immunity may be acquired from the mother, since the mother's diphtheria antitoxin passes through the placenta into the fetal circulation. Such passive immunity commonly disappears at the age of six to nine months.

The immunity of a population is a variable factor; it changes from place to place and from generation to generation. The degree of natural immunity present in any community at any given time is dependent on its experience with *C. diphtheriae,* on the number of avirulent and virulent carriers, on the type of organism prevalent, on the number of cases of diphtheria and on the density and age of the population. Recent evidence[1] suggests that natural community resistance is highest where there is a high virulent carrier rate, where the gravis type of *C. diphtheriae* is prevalent, where cases of diphtheria are more frequent, where the population is dense or in places where these conditions have been recently current. Avirulent carriers, however, may also be responsible for producing community resistance. The lowest natural immunity is found in rural areas where there is neither the disease nor carriers. Diphtheria is most likely to occur in a locality where the immunity is low, where there are frequent contacts among a young population and where the diphtheria organism becomes prevalent. The presence of diphtheria in a community increases its immunity, but usually at the cost of increased morbidity and mortality. The immunity of a locality may be increased by systematic immunization of pre-school and school children.

Schick testing, as a routine procedure, is no longer considered essential either before or after immunization, except in a patient in whom the physician may wish to ascertain the presence or absence of sufficient immunity. Schick-testing surveys, however, are of value in estimating the level

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of the locality's immunity, as was done by Gill[2] in Alabama, where 89 per cent of 2510 white children six to fifteen years old were without a history of previous immunization and were Schick negative. In Virginia[3] of 2445 children tested 70 per cent gave negative reactions—77 per cent of those previously immunized and 60 per cent of those uninoculated. Observations in Cleveland[4] reveal that the annual increment of negative Schick reactions in children aged five to fourteen years, who had not been immunized, averaged 2.5 per cent yearly with the result that only 36 per cent of the children of age fifteen were Schick negative. It is apparent that the results of these surveys cannot be applied to other localities, and that the immunity as determined by the Schick test varies in different communities.

Artificial Immunization

Present methods of controlling diphtheria as a community disease depend largely on active artificial immunization. In 1913, Von Behring reported successful immunization of children with toxin-antitoxin mixtures, and rapid development of immunization technic has continued to the present. After a primary stimulus, produced artificially by injection or naturally by infection, the titer of antibodies is low; after the second stimulus there is, however, a greater and more rapid response, and the antibody titer reaches a much higher level. Subsequent stimuli tend to raise the titer. Because natural immunity is frequently absent in young children, it is desirable to provide both primary and secondary stimuli in artificial immunization. Most methods therefore require the administration of more than one dose of antigen. Alum-precipitated toxoid was introduced by Glenny on the hypothesis that because of the delayed absorption of the toxoid a single injection produced both primary and secondary stimulus effects and thereby resulted in a sufficiently high immunity. Recently, the Subcommittee on Diphtheria of the Committee on Evaluation of Administrative Practices of the American Public Health Association[5] completed a critical study of the efficiency of community immunization, using various doses of fluid toxoid and alum-precipitated toxoid. These studies were made over a period of four years on 2523 children. The level of immunity reached after immunization was determined by titration of the antibodies present in the blood at intervals ranging up to thirty-six months after immunization. These workers have demonstrated that two doses of alum-precipitated toxoid, administered three weeks apart, gave the highest percentage of children with a demonstrable level of antitoxin in the blood. The results with three doses of fluid toxoid were very nearly as satisfactory, and those with one dose of alum-precipitated toxoid were sufficiently good to warrant its use under certain circumstances. Two doses of fluid toxoid did not give a high percentage of immunity. The comparison of antitoxin response to the different immunizing procedures is summarized in Table 1.

Table 1. *Comparison of Antitoxin Response to Different Immunizing Procedures.**

Procedure	Interval between First Injection and Antitoxin Titration: 4 months			12 months			24 months			36 months		
	No. of cases	.001 unit or more	.01 unit or more	No. of cases	.001 unit or more	.01 unit or more	No. of cases	.001 unit or more	.01 unit or more	No. of cases	.001 unit or more	.01 unit or more
		%	%		%	%		%	%		%	%
Two injections fluid toxoid (3-week interval)	240	65.5	32.5	183	57.9	27.9	114	50.8	24.6	—	—	—
One injection alum-precipitated toxoid	413	92.0	58.1	379	88.1	49.0	361	79.8	36.6	120	70.0	23.3
Three injections fluid toxoid (3-week intervals)	393	96.2	71.2	203	94.2	64.5	51	92.2	68.6	—	—	—
Two injections alum-precipitated toxoid (2-week interval)	332	100.0	96.0	203	100.0	92.7	—	—	—	—	—	—

*Taken from Volk and Bunney.[6] All children had less than 0.001 unit of antitoxin per cubic centimeter of serum at the time of the first injection.

As a result of these studies, the Committee on Evaluation of Administrative Practices[6] has recommended that two doses of alum-precipitated diphtheria toxoid with a four-week or one-month interval between doses, or three doses of fluid toxoid at four-week or one-month intervals are the preferred practice for pre-school and school children under ten years of age. In 1932, Godfrey[7] stated that the immunization of 30 per cent or more of the group under five years of age, in addition to more than 50 per cent of children five to nine, is adequate to produce a striking decline in the diphtheria rate of a community. The "Ap-

praisal Form for Local Health Work" of the American Public Health Association[8] evaluates the immunization of pre-school children as five times as high as the immunization of elementary school children. A community immunization program should be aimed at the under-five age group, which contains the highest proportion of susceptible children. Prevention of diphtheria in infants reduces not only morbidity but also mortality, because case-fatality is highest under two years of age and decreases with increasing age.

Types of C. Diphtheriae

Diphtheria has been steadily decreasing in the United States since the latter part of the nineteenth century. Figure 1 shows the decline that occurred in Massachusetts. Up to about 1925, the decline was gradual and apparently due to natural causes. About 1923, artificial immunization became a widespread community practice, and thereafter the decline of diphtheria was accelerated.

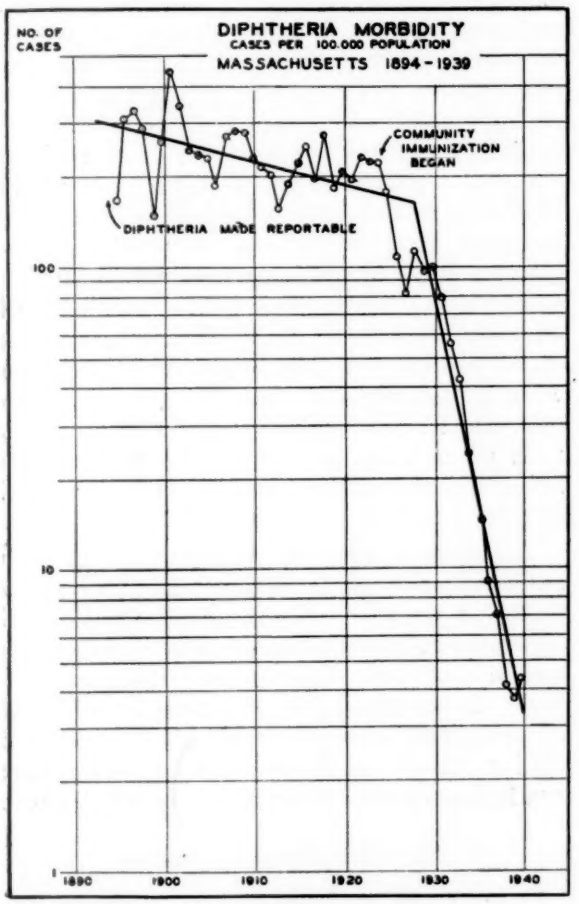

Figure 1. *Diphtheria Morbidity.*

The heavy line represents the calculated trend. There is a gradual decrease in morbidity until 1927, and a more rapid decrease thereafter.

Undoubtedly, natural causes still play a role in the more rapid decline. One of these natural causes has been discussed as latent immunity. Changes in *C. diphtheriae* are another important natural cause. Diphtheria is one of the diseases that fluctuate in prevalence and involve periods of many years. During the last sixty years we have been on the downward slope of such fluctuation. This fluctuation may be due, in part, to intrinsic changes in *C. diphtheriae* that affect the virulence, invasiveness and toxigenicity of the organism.

Whether the various types described by Anderson et al.[9] arose during recent years is a matter of speculation. But as a result of observing the fluctuations of infectiousness and toxigenicity in diphtheria organisms at Leeds during an outbreak of unusually severe diphtheria, the authors determined that the organisms from the malignant or fulminating cases were culturally different from strains isolated from milder cases; they divided the strains of *C. diphtheriae* into three types — gravis, intermedius and mitis. The gravis type, associated with severe toxic cases, is characterized culturally by a granular deposit and pellicle formation in broth, by flattened lusterless colonies of irregular outline on chocolate tellurite media and by fermentation of polysaccharides. The mitis type was isolated from milder cases in which there was extensive membrane formation, without toxic manifestation but with obstructive symptoms. The cultural characteristics of mitis organisms are uniform turbidity in broth, convex, partly translucent and light-reflecting colonies on chocolate tellurite media and no fermentation of polysaccharides. About 5 to 10 per cent of the strains were of the intermedius types, which are characterized by granular growth in broth but no fermentation of polysaccharides.

Some authors have been unable to correlate these cultural characteristics with the clinical severity of cases. The gravis organism is a poor toxin producer as determined in the laboratory. Judged by present methods, the gravis organism may be avirulent, or cause mild cases. It is entirely possible, however, that the clinical association of toxicity observed in gravis-type infections is not adequately tested by present laboratory procedures. Field data indicate that the prevalence of the gravis type may be associated with increased morbidity and mortality. Data collected by Frobisher[1] suggest that in Virginia and Alabama the virulent gravis organism has been increasing in prevalence during the past two years, whereas in certain northern communities the mitis type is more prevalent. This observation becomes significant when it is remembered that in the past decade mortality has de-

clined much more rapidly in the North than in the South.

There is a marked difference in the prevalence of types of *C. diphtheriae* in various localities, and even from year to year in the same locality. Aside from purely bacteriological differences, this variation of the prevailing type of organism may have fundamental importance. It is not unlikely that the determination of fluctuations in the prevailing types may be correlated with morbidity and mortality rates and with latent immunity, and that it may thereby furnish a base line for the evaluation and administration of the methods of diphtheria control. The prevalence of mitis type is associated with low immunity and low morbidity. The shift of the prevailing type from mitis to intermedius and gravis types may indicate increased morbidity and mortality, and may forecast to public-health officials the trend of the disease to be expected in the community.

Diphtheria Carriers

Diphtheria is a respiratory disease usually spread by carriers of virulent organisms. Carriers may be either convalescent and temporary or chronic, as a result of sub-clinical infection or previous disease. Hartley and Martin[10] determined the rate at which the diphtheria organism disappeared from the throats of convalescents. The rate of disappearance depends on the type of organism, the treatment, reinfection and the criterion of the tests applied. These workers used as their standard three successively negative cultures taken at weekly intervals, and calculated the date of disappearance of the organisms as midway between the last positive and the first of three negatives. They determined that after the fifth day of admission there was a constant logarithmic decrease in the number of carriers, and that an individual who had carried organisms in his throat for six weeks was just as likely to become free during the next week as one who had carried the organisms for only one week. About 5 per cent of those who were carriers one day gave negative cultures the following day. This decrease continued during the fifty days in which the patients were under observation, and 10 per cent of the original group remained carriers at the end of this period.

Most diphtheria carriers, however, have subclinical infections and have never had the disease. Carrier rates vary in different localities, from year to year, and from season to season. It is to be noted in Frobisher's figures[1] that natural immunity appears to run roughly parallel to the carrier rate. Virulent carrier rates are higher in the South than in the North. In Alabama, with a carrier rate of 5.4 per cent, there was a high natural immunity (80 per cent at ages five to fourteen), although less than 40 per cent of the organisms in carriers were virulent. In Kingston, New York,[11] where 1700 children were cultured, there were no virulent carriers, and 1.55 per cent avirulent carriers associated with 30 per cent naturally immune in the five-to-fourteen age group. This observation indicates that avirulent carriers may play an important role in the latent immunization of a community.

Although other lymphoid tissue and the mucous membrane of the nose and throat may be involved, the localized infection responsible for the chronic carrier state is usually limited to the faucial tonsils. The organisms may be limited to the surface epithelium, but more commonly invade the crypts and are discharged in a fibrinous exudate. Some carriers discharge organisms solely from the nose, and in these the lesion is associated with injury of the nasal mucosa or that of the accessory sinuses. Diagnosis of a carrier can be made only by culturing the organisms from swabs that have been stroked over the tonsils and the posterior nasal mucosa. Carriers should be considered sources of dangerous infection until proved otherwise, and should be isolated to prevent the spread of diphtheria. In Massachusetts[12] all convalescent patients and contacts of cases are required to have two negative nose and throat cultures taken at an interval of twenty-four hours before they are released, unless it is demonstrated that the organism is avirulent.

Treatment of the carrier to remove the infection has usually proved unsatisfactory. Diphtheria antitoxin has no effect on the carrier stage. Local applications of various disinfectants and drugs have been of no avail. Tonsillectomy has proved effective in removing the infection from faucial carriers. This operation should not be performed until at least six weeks have elapsed since the acute attack, because toxic myocarditis[13] may be present.

New Diagnostic Procedures

In every case of acute upper-respiratory infection with definite membrane formation, diphtheria should be considered and the infection treated as such until proved otherwise. The diagnosis is confirmed by finding diphtheria organisms in cultures taken from the suspicious membrane in the nose or throat. Various culture mediums have been tried in an attempt to accelerate the growth of *C. diphtheriae* and inhibit that of other organisms. Several modifications of Clauberg's medium have been investigated as a substitute for the slower Löffler's medium. Most investigators[14, 15] agree

that Clauberg's medium is not a substitute but rather an adjuvant to Löffler's medium, and that it is apt to give many false positives. Many laboratories have utilized small test tubes containing but 1 cc. of Löffler's medium and have found these to be quite effective and more economical, provided they are kept moist. The tubes containing the broken-off swab and sealed with a rubber stopper[16] may be kept in the vest pocket for three to four hours at body temperature and still give satisfactory results. Experienced laboratory technicians are able to identify diphtheria bacilli in direct smears made from swabs that are moist and have been stroked vigorously over the membrane.

The Manzullo test[17, 18] for the diagnosis of diphtheria consists of rubbing a swab, which has been treated with 2 per cent potassium tellurite, over the suspected membrane; whereupon diphtheria organisms become distinguished from others by assuming a black discoloration. This test, however, is not reliable, because it has produced a very high percentage of false positives and some false negatives. The most reliable diagnostic procedures remain direct smear and culture on Löffler's medium. For the typing of *C. diphtheriae* according to colony characteristics, chocolate or blood tellurite agar has proved most satisfactory.[19]

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MASSACHUSETTS MEDICAL SOCIETY

PROCEEDINGS OF THE COUNCIL

Stated Meeting, October 2, 1940

A STATED meeting of the Council of the Massachusetts Medical Society was held in John Ware Hall, Boston Medical Library, 8 Fenway, Boston, on Wednesday, October 2, at 10:30 a.m. The president, Dr. Walter G. Phippen, Essex South, was in the chair, and 234 councilors (Appendix No. 1) were present.

After calling the meeting to order, the President spoke as follows:

We meet here today in great sorrow. A beloved friend, a wise counselor, is absent. I knew Dr. Begg only slightly before I assumed office as your president, over a year ago, but since then we had been very intimately associated; I became very fond of him, and learned to appreciate his untiring effort and loyalty to the interests of the Society, his great capacity for understanding the capabilities of men, his stern integrity and honesty, and, above all, his keen delight in living this troublesome life of ours. I traveled to Chicago with him less than a week before he died. He contributed much at the meeting in regard to the role of the medical schools in matters of medical preparedness, and appeared in excellent health. On the return trip he left the train at Albany, with the keen expectation of a visit to his new granddaughter, of whom he was very proud. He returned to Boston, settled the affairs of his office, went to bed and slipped quietly into his last sleep. Although we have the deepest sympathy for his children, who in such a short period of time have lost their parents, we should give thanks that he was spared a long and distressing illness.

Alexander Swanson Begg was born in Council Bluffs, Iowa. He attended Collegiate Institute, Sarnia, Ontario, and Drake University. He received his medical degree from Drake University College of Medicine in 1907. From 1907 through 1913 he held successively the positions of instructor, assistant professor and professor of pathology, histology and embryology at Drake University College of Medicine. During 1911 and 1912 he was also a teaching fellow at Harvard Medical School, and in 1913 was appointed instructor in comparative anatomy. Dr. Begg was appointed dean of the graduate medical school at Harvard in 1918. In 1921, after a period as professor of anatomy at Carnegie Institute, he became professor of anatomy at Boston University School of Medicine, and in 1923 was raised to the position of dean of Boston University School of Medicine.

Dr. Begg was a fellow of the American Medical Association and held memberships in the American Association of Anatomists, American Association of Medical Colleges, American Association of University Professors, Association of Military Surgeons and many other organizations.

In 1935 he was elected secretary of the Massachusetts Medical Society, which office he held at the time of his death; he was also Massachusetts chairman of the National Committee on Medical Preparedness of the American Medical Association.

We may indeed say: "Well done, thou good and faithful servant. . . . Enter thou into the joy of thy lord."

All members of the Council rose and stood in silence for a minute.

The President appointed Dr. Robert N. Nye, Suffolk, secretary *pro tempore,* and this was confirmed by vote of the Council.

The records of the annual meeting of May 21, 1940, were presented by the Secretary *pro tempore,* as published in the June 20, 1940, issue of the *New England Journal of Medicine.* No errors or omissions being noted, the Council voted to approve the records as printed.

Reports of Standing Committees

Membership

The report (Appendix No. 2), which was presented by the chairman, Dr. G. Colket Caner, Suffolk, recommended that two fellows be allowed to retire, one to resign, one to have his dues remitted, five to change their membership from one district society to another, and one to be deprived of the privileges of fellowship. The Council voted to accept the report and to approve the recommendations.

Financial Planning and Budget

The chairman, Dr. John Homans, Suffolk, presented the report (Appendix No. 3), which contained the recommendation that one hundred and fifty dollars be appropriated for the use of the special committee of the Committee on Public Relations to study tax-supported medical care in Massachusetts. The Council voted to accept the report and to approve the recommendation.

Arrangements

As the chairman, Dr. Edward J. O'Brien, had been called away from the meeting, the Secretary *pro tempore* read the report (Appendix No. 4). It was accepted by the Council.

Ethics and Discipline

The chairman, Dr. Robert L. DeNormandie, Suffolk, stated that there was no regular report; however, a supplementary report (Appendix No. 5) was presented by the senior member of the committee, Dr. Ralph R. Stratton, Middlesex East. The Council voted to accept the report.

Medical Education and Medical Diplomas

The chairman, Dr. John P. Monks, Suffolk, stated that the committee had been instructed to give a report relative to what changes in the by-laws would be required for a shifting of the responsibility of recommending for fellowship the graduates of unapproved and foreign medical schools from the central committee to a district committee. He reported progress and requested permission to postpone the final report until the next meeting of the Council. It was voted to accept the report and to grant permission to delay the final report.

Others

There were no reports from the Committee on Public Health, Committee on State and National Legislation, Committee on Publications, Committee on Medical Defense and the Committee on Permanent Home.

Reports of Special Committees

Public Relations

The report of the committee (Appendix No. 6), exclusive of the report of the subcommittee on the medical-costs insurance plan, was read by its secretary, Dr. Elmer S. Bagnall, Essex North. At the suggestion of the President, the first, second and fourth sections of the report were acted on first and accepted by the Council, action on the third section, which dealt with the medical-costs insurance plan, being deferred for the moment. The first and second recommendations were adopted.

Dr. Thomas H. Lanman, Suffolk, chairman of the subcommittee appointed to formulate and present to the Legislature an enabling act to provide for a medical-costs insurance plan, was then asked to give his report.

Dr. Michael A. Tighe, Middlesex North, moved a recess of fifteen minutes to permit the councilors to read the synopsis of the enabling act, copies of which had been distributed. This motion was duly seconded and passed.

The meeting was adjourned for fifteen minutes.

Dr. Lanman then read the synopsis of the proposed act. He pointed out that what he had read was merely a synopsis of the proposed act, which would conform to the five recommendations of the committee that had been approved by the Council at its meeting in June. He added that specific regulations would be contained in the by-laws of the medical-costs insurance corporation that would be formed by the Society by virtue of the enabling act.

Dr. Lanman then briefly commented on the various sections of the act. He said that Section 2, which specifies that the trustees be appointed with the approval of a recognized medical society, might cause difficulty, but that the committee was unanimous in its belief that any medical-costs insurance corporation should be under the control of the Society. Section 3, he said, would probably be changed, but the intent was to establish units for medical-costs insurance only in those counties in which the practicing physicians favored the plan. He called attention to the addendum, and requested all to read it carefully.

The President opened the matter for general discussion, calling attention to the fact that no action was to be taken by the Council other than to give suggestions as to changes.

In reply to a question by Dr. Sidney M. Saltz, Norfolk, as to why an enabling act was necessary when a non-profit, prepayment, medical-service group was already in operation, Dr. Lanman replied that experience in other states had indicated that any such corporation should, ideally, be under the supervision of the state commissioner of insurance, regardless of whether or not such a provision was necessary from a legal standpoint.

Dr. Reginald Fitz, Suffolk, asked for a definition of the "recognized medical society" under which the control of the corporation would be. Dr. Lanman answered that the only organization conforming to the definition was the Massachusetts Medical Society, where, in the opinion of the committee, the control belonged.

The treasurer, Dr. Charles S. Butler, Suffolk, inquired as to the cost, if any, of such a plan to the Society. Dr. Lanman replied that he did not know, but Dr. Tighe, a member of the subcommittee and vice-chairman of the Committee on Public Relations, said that no expense was involved, other than the money spent by the Society up to the time of the establishment of the corporation. Dr. George L. Schadt, Hampden, asked from whom the five thousand dollars necessary for the granting of authority to do business in any county was to be obtained. Dr. Lanman replied that this section undoubtedly needed minor changes, but that its chief intent was to ensure reliable financing so that a fly-by-night organization could not get started.

At the request of Dr. John W. Bartol, Suffolk, Dr. Lanman gave an outline of the steps in obtaining the New Jersey enabling act and in creating a medical-costs insurance corporation. He said that, because the latter has been functioning only since June, no data are available as to its ultimate success, and that the Medical Society of New Jersey admits that the scheme is experimental and evolutionary.

In reply to the question of Dr. Edward F. Timmins, Suffolk, as to whether legal counsel had approved of the proposed act, Dr. Lanman replied that a member of the firm of Palmer, Dodge, Barstow, Wilkins and Davis, counsel for the Massachusetts Medical Society, had studied it and that although he had not rendered a written opinion he would do so before the act was submitted to the Legislature.

Dr. Richard Dutton, Middlesex East, asked whether a plan of this sort had been conducted elsewhere longer than it had in New Jersey. Dr. Lanman said that the Michigan plan has been in operation longer, but that it was only when the Ford employees became members that any particular interest had been evinced.

Dr. David Cheever, Suffolk, said that Section 8 seemed to be so worded that a non-participating physician rendering emergency treatment would not be reimbursed by the corporation. Dr. Lanman admitted that the section needed rewording, since the intent was to reimburse any duly registered physician who had rendered emergency service.

Dr. Caner questioned the advisability of specifying that 51 per cent of the physicians in any county must be willing to participate in order for the corporation to be allowed to function in that county. Dr. Lanman said that the wording would undoubtedly be changed but that the intent was to permit operation of the plan only in those counties in which there was a demand for the service.

Considerable discussion followed relative to the geographic designation of the units of the proposed corporation. Since the districts of the Society do not conform to county lines, several councilors said that difficulties were sure to arise. Dr. Albert A. Hornor, Suffolk, finally suggested that "section or sections" be substituted for the words "county or counties" in Section 3.

Since there were no further questions, Dr. Bagnall moved that the third section of the report be accepted and that the third recommendation, namely, the endorsement in principle of the outline for medical-costs insurance enabling legislation, be approved. This was seconded, and passed by vote of the Council. The report of the committee as a whole was then accepted by the Council.

Postgraduate Instruction

The report (Appendix No. 7) was presented by the chairman, Dr. Frank R. Ober, Suffolk, and was accepted by vote of the Council.

Convalescent Care

In the absence of the chairman, Dr. T. Duckett Jones, Suffolk, the report of progress (Appendix No. 8) was not read.

Restoration to Fellowship

The reports of the committees previously appointed to consider petitions for restoration to fellowship were accepted, and the recommendations to reinstate the following three fellows were approved by the Council:

Edward J. Kelley, Watertown (Committee: Albert B. Toppan, Pericles Canzanelli and Eugene F. Gorman).

Burton E. Lovesey, Roslindale (Committee: Guy F. Blood, John F. Ford and John J. Elliott).

Louis F. Salerno, East Boston (Committee: Harvey A. Kelly, George H. Schwartz and Raymond B. Parker).

Others

There were no reports from the Committee on Cancer, Committee on Physical Therapy, Committee to Consider Expert Testimony, Committee on Automobile Insurance Claims, Committee on Industrial Health, Committee on Army Medical Library and Museum and Committee to Study Practice of Medicine by Unregistered Persons.

Appointments of Committees

Dr. Edwin B. Dunphy, Suffolk, and Dr. Henry W. Hudson, Jr., Middlesex South, were appointed members of the Auditing Committee by the President.

The following committees were approved by the Council to consider petitions for restoration to fellowship:

For Edward T. Abrahms, Pittsfield:
Charles T. Leslie, Modestino Criscitiello, Jr., and I. S. F. Dodd.

For Elmer J. Beaulieu, Whitman:
Walter H. Pulsifer, Joseph H. Dunn and Alfred C. Smith.

For Joseph J. Carella, Quincy:
Charles S. Adams, T. Vincent Corsini and Alfred V. Mahoney.

For L. W. Darrah, Northampton:
Justin E. Hayes, Michael E. Cooney and Joseph R. Hobbs.

For Harry J. Hagerty, Worcester:
John H. Hartnett, Peter A. Colberg and Julius J. Tegelberg.

For Morris J. Ritchie, Westfield:
Archibald J. Douglas, Edward S. Smith and Robert M. Marr.

For Kent T. Royal, North Brookfield:
James C. Austin, Milman Pease and Thomas J. O'Boyle.

For Robert V. Schultz, New York City:
Joseph D. Ferrone, Oliver G. Tinkham and M. Fletcher Eades.

For Honoria K. Shine, Holyoke:
Edward P. Bagg, George D. Henderson and Patrick E. Gear.

The President asked for confirmation of the following committee to confer with a similar com-

mittee from the American Hospital Association in regard to various matters, including defense preparedness:

Howard M. Clute, Boston, *chairman*
Benjamin H. Alton, Worcester
Richard B. Cattell, Boston
Edwin D. Gardner, New Bedford
Albert E. Parkhurst, Beverly
Frank W. Snow, Newburyport

The following interim appointments by the President were approved by the Council: Henry C. Marble, Suffolk, chairman of the Committee on State and National Legislation; H. Quimby Gallupe, Middlesex South, and Reginald Fitz, Suffolk, councilors.

Incidental Business

The President referred to a suggestion made in his report at the annual meeting of the Society in June, namely, the serious consideration of the advisability of creating the office of president-elect, and asked for comments. Dr. Homans moved that, in view of the fact that a secretary had to be chosen in the near future, the President appoint a committee of five to study the desirability of establishing the offices of president-elect and full-time or executive secretary and the necessary changes in the by-laws required to create these positions. The motion was seconded. After some discussion, chiefly pertaining to a full-time or executive secretary, the motion was passed by the Council.

Dr. Leroy E. Parkins, Suffolk, moved that the remarks of the President relative to Dr. Begg's death be sent to his family as an expression of sympathy and of appreciation of all that he had done for the Society. The motion was seconded and passed.

Dr. Charles E. Mongan, Middlesex South, called attention to the fact that the constitution and by-laws of the Society differ from those of all other state medical societies, which in turn are all modeled after that of the American Medical Association. He said that this applied particularly to the districts of the Society, which in all other states are defined by county lines. He suggested that, since a committee had already been appointed to consider changes in the by-laws, it should also study the propriety of altering the constitution and by-laws in such a way that they would conform to those of other state medical societies, and made a motion to that effect; this was seconded. The Council voted to accept the motion.

Dr. Charles J. Kickham, Norfolk, deplored the fact that the councilors but rarely receive advance information in regard to matters on which they are supposed to render mature judgment. The President replied that it was the intent of the officers of the Society to inform the councilors in advance, but that one or another factor invariably arose that made such information impossible. He further stated that a more serious effort would be made in the future.

Dr. Harold R. Kurth, secretary of the Essex North District Medical Society, presented a resolution (Appendix No. 9) from that society. He prefaced the reading of the resolution by stating that the physicians in and about Lawrence were concerned by the fact that foreign refugee physicians are permitted to practice in Massachusetts after they have passed the examination of the Board of Registration in Medicine and have signified their intentions of becoming American citizens, as is also true in New York State. He added that most states require full citizenship, and that, as a consequence, these two states are apt to become the concentration point of these foreign-born and foreign-trained physicians. Furthermore, he stated that in certain instances, their conduct is not along strictly ethical lines. He said that this concern had resulted in a petition by the Greater Lawrence Medical Society to the Essex North District Medical Society requesting an opinion and that the latter had rendered its opinion in the form of the resolution that he presented. Considerable discussion followed. Dr. Charles C. Lund, Suffolk, pointed out that two years previously the Committee on State and National Legislation had been instructed by the Council to approve and promote legislation requiring only the first naturalization papers and that a move within such a period of time to demand full citizenship would seriously handicap the committee in its work; he moved that the resolution be referred to the Committee on State and National Legislation. The motion was seconded, and passed by the Council.

In closing the President urged all councilors to return the questionnaires sent out by the Committee on Preparedness of the American Medical Association, and asked them in turn to inform fellow members to do the same. He said that blank questionnaires could be obtained at the headquarters of the Society.

The meeting was adjourned at 1:00 p.m.

Robert N. Nye, *Secretary* pro tempore.

APPENDIX NO. 1

ATTENDANCE

BARNSTABLE

M. E. Champion
D. E. Higgins
W. D. Kinney

BERKSHIRE

J. J. Boland
I. S. F. Dodd
C. F. Kernan

BRISTOL NORTH

R. M. Chambers
W. H. Allen
F. H. Dunbar
W. H. Swift

BRISTOL SOUTH

G. W. Blood
R. B. Butler
P. E. Truesdale

ESSEX NORTH

R. C. Norris
E. S. Bagnall
R. V. Baketel
C. S. Benson
E. H. Ganley
H. R. Kurth
P. J. Look
L. C. Peirce
G. L. Richardson
F. W. Snow
T. N. Stone
C. F. Warren
C. A. Weiss

ESSEX SOUTH

Loring Grimes
H. A. Boyle
N. P. Breed
S. E. Golden
P. P. Johnson
J. F. Jordan
B. B. Mansfield
A. E. Parkhurst
W. G. Phippen
Horace Poirier
J. R. Shaughnessy
J. W. Trask
C. F. Twomey

FRANKLIN

F. J. Barnard
A. H. Ellis
W. J. Pelletier
H. G. Stetson

HAMPDEN

F. H. Allen
T. S. Bacon
E. P. Bagg
W. A. R. Chapin
J. L. Chereskin
E. C. Dubois
G. L. Gabler
P. E. Gear
Frederic Hagler
G. D. Henderson
M. W. Pearson
A. G. Rice
G. L. Schadt

HAMPSHIRE

A. J. Bonneville
L. N. Durgin
L. B. Pond

MIDDLESEX EAST

G. R. Murphy
C. R. Baisley
J. H. Blaisdell
Richard Dutton
E. M. Halligan
J. H. Kerrigan
K. L. Maclachlan
R. W. Sheehy
R. R. Stratton

MIDDLESEX NORTH

W. M. Collins
R. L. Drapeau
D. J. Ellison
F. L. Gage
A. R. Gardner
G. A. Leahey
E. O. Tabor
M. A. Tighe

MIDDLESEX SOUTH

Dwight O'Hara
C. F. Atwood
E. W. Barron
Harris Bass
E. H. Bigelow
G. F. H. Bowers
R. W. Buck
E. J. Butler
Richard Collins, Jr.
B. F. Conley
P. A. Consales
D. F. Cummings
C. H. Dalton
H. F. Day
C. L. Derick
J. E. Dodd
A. W. Dudley
E. R. Fleming
H. Q. Gallupe
F. W. Gay
H. G. Giddings
H. W. Godfrey
B. I. Goldberg
W. G. Grandison
A. D. Guthrie
A. A. Levi
A. N. Makechnie
R. A. McCarthy
J. A. McLean
Edward Mellus
J. C. Merriam
C. E. Mongan
J. P. Nelligan
E. J. O'Brien
L. S. Pilcher
E. S. A. Robinson
E. F. Ryan
E. J. Sawyer
M. J. Schlesinger
W. N. Secord
E. F. Sewall
E. W. Small
H. P. Stevens
R. A. Taylor
H. W. Thayer
J. H. Townsend
F. Van Nüys
R. H. Wells
M. W. White
Hovhannes Zovickian

NORFOLK

F. P. McCarthy
F. J. Bailey
J. R. Barry
Carl Bearse
M. I. Berman
F. P. Denny
G. L. Doherty
D. G. Eldridge
H. M. Emmons
J. C. V. Fisher
Susannah Friedman
David Glunts
B. T. Guild
J. B. Hall
Morris Ingall
H. J. Inglis
H. L. Johnson
C. J. Kickham
C. J. E. Kickham
E. L. Kickham
D. L. Lionberger
Charles Malone
F. J. Moran
M. W. O'Connell
Frederick Reis
S. M. Saltz
D. D. Scannell
Nathan Sidel
J. W. Spellman
W. J. Walton
N. A. Welch

NORFOLK SOUTH

C. S. Adams
H. H. A. Blyth

PLYMOUTH

J. E. Brady
A. L. Duncombe
P. B. Kelly
P. H. Leavitt
G. A. Moore
D. W. Pope
W. H. Pulsifer

SUFFOLK

A. A. Hornor
A. W. Allen
J. W. Bartol
W. B. Breed
W. J. Brickley
W. E. Browne
C. S. Butler
G. C. Caner
E. M. Chapman
David Cheever
M. H. Clifford
H. M. Clute
R. L. DeNormandie
N. W. Faxon
G. B. Fenwick
Reginald Fitz
Channing Frothingham
M. N. Fulton
Joseph Garland
John Homans
Rudolph Jacoby
H. A. Kelly
T. H. Lanman
R. I. Lee
C. C. Lund
G. R. Minot
W. J. Mixter
J. P. Monks
Donald Munro
H. L. Musgrave
R. N. Nye
F. R. Ober
J. P. O'Hare
L. E. Parkins
Helen S. Pittman
W. H. Robey
G. C. Shattuck
R. M. Smith
Augustus Thorndike, Jr.
E. F. Timmins
S. N. Vose
Shields Warren
Conrad Wesselhoeft

WORCESTER

J. M. Melick
J. C. Austin
Gordon Berry
W. P. Bowers
G. A. Dix
G. E. Emery
J. M. Fallon
J. J. Goodwin
E. L. Hunt
E. R. Leib
W. F. Lynch
A. W. Marsh
J. C. McCann
J. W. O'Connor
W. C. Seelye
C. A. Sparrow
G. C. Tully
F. H. Washburn
S. B. Woodward

WORCESTER NORTH

B. P. Sweeney
E. A. Adams
H. C. Arey
T. R. Donovan
C. B. Gay
J. C. Hales

APPENDIX NO. 2

Report of the Committee on Membership

The committee recommends:

1. That the following named two fellows be allowed to retire under the provisions of Chapter I, Section 5, of the by-laws:

Connell, Arthur I., Fall River
Fales, A. C., Wolfville, Nova Scotia

2. That the following named fellow be allowed to resign under the provisions of Chapter I, Sections 6 and 7, of the by-laws:

LaLiberté, Elie J., Springfield, with remission of dues for 1938, 1939 and 1940

3. That the dues of the following named fellow be remitted under the provisions of Chapter I, Section 6, of the by-laws:

Jones, Raymond C., Fitchburg, 1940

4. That the following named five fellows be allowed to change their membership from one district society to another without change of legal residence, under the provisions of Chapter III, Section 3, of the by-laws:

From Middlesex South to Suffolk

Hurxthal, Lewis M., Newton Centre
Ziegler, Edwin E., Brighton

From Norfolk to Suffolk

Bartlett, Marshall K., Dedham
Davis, Lincoln, Needham
Fine, Jacob, Chestnut Hill (Brookline)

5. That the following named fellow be deprived of the privileges of fellowship under the provisions of Chapter I, Section 8 (c) of the by-laws:

Carogana, Anthony P., Chelsea

G. Colket Caner, *Chairman.*

APPENDIX NO. 3

Committee on Financial Planning and Budget

The Committee on Financial Planning and Budget has been asked by the President to report on the granting of an appropriation of one hundred and fifty dollars for the use of a special committee of the Committee on Public Relations to make a study of tax-supported medical care in Massachusetts enlisting the co-operation of state, city and town welfare, old age and veterans' relief administrators, looking toward better standards of care and better mutual understanding of problems of the physicians and of the public agencies. This matter was brought up at the May, 1940, meeting of the Council. The committee has voted in favor of this appropriation.

This report therefore carries the following recommendation: That one hundred and fifty dollars be appropriated for the use of a special committee of the Committee on Public Relations for a study of tax-supported medical care in Massachusetts enlisting the co-operation of state, city and town welfare, old age and veterans' relief administrators, looking toward better standards of care and better mutual understanding of problems of the physicians and of the public agencies.

John Homans, *Chairman.*

APPENDIX NO. 4

Committee of Arrangements

The committee of Arrangements reports that the annual meeting of the Society will be held on Wednesday and Thursday, May 21 and 22, 1941, at the Copley-Plaza Hotel, Boston.

The committee plans to conduct meetings on the same general lines as it did last year. There will be two general clinical meetings on each day, along with round-table discussions on the first day.

Edward J. O'Brien, *Chairman.*

APPENDIX NO. 5

Supplementary Report of the Committee on Ethics and Discipline

A special meeting of the Committee on Ethics and Discipline was held on September 18 to consider charges brought against certain members of the Society. The President presided in the absence of the chairman.

After due consideration and lengthy discussion of the evidence presented at that time, it was unanimously decided by the Committee on Ethics and Discipline that the charges were not sustained.

APPENDIX NO. 6

Report of the Committee on Public Relations

The committee has held one meeting since May. The report is divided into four parts.

1. The President appointed the skeleton of a special committee to study certain aspects of tax-supported medical care, pursuant to authority granted at the Council meeting in May, 1940. This committee reports through the Committee on Public Relations. Bagnall, the chairman, makes the following report of progress:

> The special committee appointed by the President on August 6, 1940, to study certain aspects of tax-supported medical care has held one meeting. It was decided to ask each district not already represented on the committee to recommend the most interested member in its fellowship for addition to the special committee.
>
> The chairman interviewed Arthur Rotch, commissioner of public welfare for the Commonwealth. The last legislature passed an act authorizing the appointment before September 18, 1940, of an advisory physician for the Department of Public Welfare. The commissioner also is to appoint an advisory committee representing medical, dental and nursing organizations to help solve some of the problems of administration of medical care to the indigent. The committee will not aggressively initiate its studies until it learns what the extent of the state activities will be.
>
> The chairman also interviewed Richard R. Flynn, commissioner of state aid and pensions and learned that there are some practices in the distribution of medical care to veterans that are contrary to the purpose of the law but not actually illegal; for example, the extensive practice of including soldiers' relief and military-aid medical service with the work of the city physicians without extra compensation from the department pauperizes the veterans. Section 17, Chapter 115, in the opinion of the commissioner, does not provide free choice of physician but does provide — with

penalty for violation — free choice of druggist, grocer and clothier. The commissioner favors amendment of the law to correct some of these evils.

The Civil-Service Commissioner has been making investigations into alleged fraudulent practice in veterans' medical services in one of the large cities of the Commonwealth for some weeks.

The special committee presents these items as a report of progress.

2. For some months the several members of the Committee on Public Relations have gone to the office of the compensation commissioner of the Works Progress Administration at Boston to see whether federal instructions for "equable distribution of medical service amongst all the physicians in the community qualified and willing to render the service" were being carried out. It has been agreed by each member of the committee that Mr. John F. Burns, the commissioner, was trying to carry out these provisions. There has been notable improvement in the service during the past year, but the committee now believes that more effective scrutiny and closer co-operation can be effected by the appointment of a special committee to take over these monthly inspections.

3. The special committee under the chairmanship of Dr. Lanman presents an outline of proposed enabling legislation to provide medical-costs insurance for physicians' services. The Committee on Public Relations has approved this plan. This bill must be introduced before January 1, 1941, in order to receive the consideration of this session of the legislature. The synopsis is as follows (presented by Dr. Thomas H. Lanman):

TITLE

An act concerning medical service corporations and regulating the establishment, maintenance and operation of medical service corporations and medical service plans.

SECTION 1. This section defines the terms used in the act.

a. A medical service corporation is any corporation organized without capital stock and not for profit, for the purpose of establishing, maintaining and operating non-profit medical-service plans.

b. A non-profit medical-service plan is any plan or arrangement operated by a medical-service corporation, under the provisions of this act, whereby the expense of medical service to subscribers is paid to participating physicians.

c. The terms "subscriber" and "subscriber dependent" are defined in this section.

d. A participating physician is defined as any physician duly licensed to practice medicine in the State of Massachusetts, who agrees in writing with the corporation to perform the medical services specified, at such rates of compensation as shall be determined by the corporation's board of trustees and who further agrees to abide by the by-laws, rules and regulations of the corporation as these relate to participating physicians.

e. Medical service includes all general and special medical services ordinarily provided by such licensed physicians in accordance with the accepted practice in the community at the time the service is rendered.

SECTION 2. This section provides that no person shall be elected a trustee of any medical-service corporation unless his nomination has been approved by a recognized medical society incorporated for not less than ten years and having not less than three thousand members holding licenses to practice medicine in Massachusetts.

SECTION 3. This section provides for the approval of the Commissioner of Insurance. Among other things the certificate of authority which the Commissioner of Insurance will issue to a medical-service corporation shall specify the county or counties in which the corporation is authorized to do business, and no such certificate may be issued unless 51 per cent of the eligible physicians in any county are participating physicians.

SECTION 4. This section provides that no certificate of authority to do business shall be issued to a medical-service corporation by the Commissioner of Insurance unless the corporation holds in cash or bank credits a sum of not less than five thousand dollars.

SECTION 5. This section has to do with contracts. Subscriber contracts shall run for one year. During the first contract year, coverage may be deferred for two months.

SECTION 6. This section further determines all the conditions of the contract entered into by the subscriber.

SECTION 7. Provides the form of contract.

SECTION 8. Relates to participating physicians and provides that no person shall become a participating physician unless he or she shall hold full license to practice medicine in the State of Massachusetts; that no payment for medical services shall be made except to a participating physician, except that the corporation in the case of emergency may reimburse any physician for services rendered to a subscriber in accordance with the rates adopted by the board of trustees with respect to participating physicians, but only to physicians who would be eligible, except for residence, to become participating physicians.

SECTION 9. Provides for the approval of contracts by the Commissioner of Insurance.

SECTION 10. Provides for the approval of rates by the Commissioner of Insurance.

SECTION 12. Provides that not more than 10 per cent of the amounts paid by subscribers in any one year shall be used for the solicitation of subscribers, except that during the first year of the corporation's authority to do business not more than 20 per cent and during the second year not more than 15 per cent shall be used for this purpose.

SECTION 13. This section provides that not more than 20 per cent of the amounts paid by subscribers in any one year shall be used, in any one year, for administrative purposes.

SECTION 14. Provides for the disposal of the corporation's surplus funds.

SECTION 15. Provides that the corporation shall prepare an annual statement.

SECTION 16. Provides for the penalties for not observing Section 15.

SECTION 17. Provides for the examination of the corporation's accounts by the Commissioner of Insurance.

SECTION 18. Provides that the Commissioner of Insurance may assess the corporation for the expense of such examination.

SECTION 19. Provides the steps which the Commissioner of Insurance may adopt or cause to be adopted in the event of the insolvency of the corporation.

SECTION 20. Provides for the acceptance by the corporation of voluntary grants or gifts, these to include possible grants by governmental agencies, for the purpose of providing needy persons with medical services. Funds under such grants shall be kept separate. The income from subscribers or the assets accumulated as a result of payment made by subscribers of the corporation shall not be available for the discharge of the obligations incurred under such grants.

SECTION 21. Such medical service corporations shall be free from state, county, town and city taxes.

ADDENDUM. It will be noted that nothing is said in this act about the income groups to be served under the act. Nothing is said directly about fees to be paid participating physicians. Nothing is said about the cost to subscriber patients. The committee wishes to say that such items do not belong in an enabling act. Such matters will be covered by the by-laws of the corporation once the enabling act has been passed by the Legislature. In the event of the passage of this enabling act, these by-laws, in due course of time, will be placed before the Council for action. It is also noted that any and all by-laws of this kind must likewise have the approval of the Commissioner of Insurance.

THOMAS H. LANMAN, *Chairman.*

4. The committee again considered the proposal of the Massachusetts Department of Public Health for the extension of the crippled children's program to include first attacks of rheumatic heart disease in indigent children under twelve. The proposal envisions establishment of hospital and home care at Boston, Springfield and Worcester by certain authorized physicians, and the Committee on Public Relations has no recommendation to make until the several districts have had a chance to consider the matter. Some districts have had no meeting since the subject was introduced.

The following recommendations are made:

1. That the Committee on State and National Legislation be authorized to introduce amending legislation with the co-operation of the Commissioner of State Aid and Pensions to eliminate the practice prevailing in some localities of providing medical care for soldiers and their dependents by city physicians and, further, to provide a free choice of physician — free choice being already available to this group in the matter of grocers, pharmacists and so forth.

2. That the President be authorized to appoint a special committee of five to make monthly inspections at the office of the compensation commissioner of the Work Projects Administration, 600 Washington Street, Boston, to assist in carrying out the regulations which provide for equable distribution of medical service among all the physicians in the several communities who are qualified and willing to serve.

3. That the outline for medical-costs insurance legislation be endorsed in principle.

ELMER S. BAGNALL, *Secretary.*

APPENDIX NO. 7

REPORT OF THE COMMITTEE ON POSTGRADUATE INSTRUCTION

The committee has completed the curriculum and organized the faculty for the postgraduate extension courses to be given during the academic year 1940–41. These sessions will begin some time this month; notices of meetings will be published in the *Journal.*

Our current budget is $13,875; of this the Society has appropriated $1000 and governmental agencies will furnish the balance. Of this sum $9525 will be used for the postgraduate extension courses, and the balance — $4350 — has been appropriated by the United States Public Health Service to aid in starting a traveling medical library for Massachusetts. As soon as the latter service is available, it will be announced in the *Journal.*

The New England Postgraduate Assembly, to be held at Sanders Theatre, Harvard University, on November 13 and 14, has been organized; the program was printed in the *Journal,* issue of September 19, 1940. Detailed programs will be mailed to all registered physicians in the sponsoring states in the near future.

The committee reports that the State Department of Public Health and other governmental agencies are co-operating with the committee in a very constructive manner. A final report of these activities will be made at the annual meeting.

FRANK R. OBER, *Chairman,*
LEROY E. PARKINS, *Secretary.*

APPENDIX NO. 8

REPORT OF THE COMMITTEE ON CONVALESCENT CARE (OF THE HOSPITAL COUNCIL OF BOSTON)

In 1934, Dr. Haven Emerson of New York, in studying the organized facilities for the care of the sick in Boston, stated that convalescent facilities were inadequate. During 1937 the Bureau of Research, at the request of the Department of Medical Social Workers, undertook a further study of the problem, and recommended: "That the Hospital Council of Boston be asked to assume responsibility for continued attack upon the problem of adequate convalescent care through the appointment of a committee. . . . One immediate and definite step which this committee should take would be a central directory of privately operated nursing homes." A special grant was obtained from the Mason Fund, and the Committee on Convalescent Care was fortunate to secure Miss Carrie M. Hall, R.N., as the director of the Nursing Home Information Bureau. Miss Hall was especially well equipped for this position in view of her previous position as head of the Training School for Nurses of the Peter Bent Brigham Hospital.

During the fall and winter of 1938–1939 and of 1939–1940, Miss Hall carried on her studies relative to the nursing-home situation as it meets the needs for the care of convalescents, patients with chronic disease and the aged. The Bureau of Information has been established with Miss Hall as its director. A large number of nursing homes have been investigated, and some have been tentatively approved by the Bureau. It has been Miss Hall's conviction that more than 90 per cent of the patients in these nursing homes are chronic and aged, and it is her opinion that this causes a depressive atmosphere for the convalescent patient. Medical supervision is lacking, there are no occupational or recreational facilities in the majority

of homes, and there is inadequate provision for special diets. In addition, it has become obvious that nurses should have special training and qualifications in order to give constructive nursing care to convalescent patients.

The nursing-home situation is of tremendous importance in the care of the ill in the City of Boston, and because of lack of organized facilities these privately operated nursing homes care for many patients discharged from hospitals. These nursing homes are not licensed except for the care of the aged, and little information concerning each home is available save that secured by Miss Hall's making an actual tour of inspection. One hundred and sixty-eight such homes are at present listed with the Nursing Home Information Bureau. It is increasingly consulted by medical social workers, physicians and others wishing to secure suitable placement for patients needing this type of care.

The Committee on Convalescent Care is of the opinion that the privately operated nursing home does not provide the solution to the problem of convalescent care because of lack of medical supervision, lack of constructive nursing care, lack of knowledge of the principles of therapeutic diets, lack of regulations regarding equipment such as bathroom facilities and so forth, lack of occupation and recreation which might be supplied by the use of occupational therapy, and an atmosphere of depression created by the preponderance of aged persons — more than 90 per cent of the occupants in these homes are aged or chronic.

The committee has therefore reached a negative conclusion regarding some of the facilities at present in use. Member hospitals were asked by the committee whether there were any funds available or obtainable by the hospitals whereby fifteen dollars a week per patient could be paid to a group of selected nursing homes which would agree to give adequate convalescent care. Replies indicated that it would be impossible to secure this amount for the majority of patients needing convalescent care in these private nursing homes.

The question was also raised as to whether the adequate care of the convalescent alone would adequately cover the present problems facing the community, and it was suggested that it would be wise to study the needs of not only the convalescent but the chronic and aged. It was urged that the Committee on Convalescent Care turn its attention to the entire question of placement of patients in these nursing homes from the point of view not only of the hospital administration but also of the medical social workers. It was voted that Miss Hall be requested to work with member hospitals, securing a complete record of discharges referred to medical social service departments for aftercare in order to obtain information as to the number of individuals involved, the types of care requested and the final disposition of each case. With this type of information it would then be possible to define the problem as to the type of medical care which discharged patients need and the adequacy with which these needs are at present being met.

In pursuance of this decision of the committee, Miss Hall has undertaken such a study and has begun to accumulate a volume of information concerning the disposition of patients from Boston hospitals. A subcommittee composed of Miss Carrie M. Hall, Miss Ida M. Cannon, Dr. Edward L. Young and Dr. T. Duckett Jones made the following recommendations:

> For the purpose of this study, the convalescent patient is one between eighteen and sixty-five years of age who has been under hospital care and who needs further medical and nursing care before return to his place in the community. He may be ambulatory or may need temporary bed care. The temporary bed care should not exceed two weeks; the convalescent period should not exceed six weeks. For the purpose of this study, the chronic patient is one between eighteen and sixty-five years of age who has been ill in a hospital and who for a prolonged period is in need of specialized medical and nursing care and supervision.

Data have already been accumulated but not analyzed on the basis of these definitions for a period of three months. Collection of data for a further period of three months will be carried out during the fall months of this year. Following the analysis of this material the committee will be in a much more satisfactory position to define the community-health problems facing the City of Boston not only in the matter of convalescent care but also as concerns the care of the chronic and the aged. Further recommendations will doubtless result from these studies.

T. Duckett Jones,
Henry E. Gallup,
Representatives of the Massachusetts Medical Society.

APPENDIX NO. 9

Resolution Presented by the Essex North District Medical Society

Whereas, The requirements for registration in medicine in Massachusetts for refugee doctors are far below the standards of the majority of states; and

Whereas, There is serious danger of Massachusetts's being flooded with refugee doctors because of these lowered standards; therefore, be it

Resolved, That the Massachusetts Medical Society take such action as is within its power to initiate legislation which shall require all refugee physicians to be United States citizens before being eligible for registration in medicine.

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor*

CASE 26441

PRESENTATION OF CASE

First Admission. A forty-four-year-old Italian housewife entered the hospital complaining of swelling of the feet of three weeks' duration.

The patient had been moderately dyspneic on exertion for many years. One year before admission she first noticed a non-radiating, squeezing precordial pain, aggravated by exercise, and relieved by a few minutes' rest. At this same time polyuria (day, 10 to 15; night, 3 to 4) developed, with some urgency and occasional incontinence. Four months before admission she had an attack of severe, knifelike pain of unstated duration in the upper abdomen and afterward noticed that the urine was darker in color. During the two months before admission she developed cramps in the left arm, which occurred on an average of three times a day and lasted for about fifteen minutes. Three weeks before admission the feet and ankles became swollen; this was most noticeable at night, but still present in the morning. In addition she developed a cough with blood-streaked sputum and had occasional slight nosebleeds. These symptoms were accompanied by headaches and nausea.

The past illnesses and family history were irrelevant. She had had seven pregnancies, five of which were miscarriages. Two children were alive and well.

On examination the patient was a flushed, obese woman of Mongoloid appearance with slanting, protruding eyes. The scleras were slightly icteric, the skin dry. The voice was rough and grating, and she complained of photophobia. The teeth were carious, the throat injected. Examination of the heart was negative except for a systolic murmur at the apex; the blood pressure was 135 systolic, 80 diastolic. Increased breath sounds and coarse rhonchi were present in the middle third of the left chest, axilla and back. The abdomen was held in voluntary spasm, but a nodular liver edge was palpable. There was an orange-sized tender mass in the epigastrium, and another tender mass, believed to be spleen, in the left flank. The flanks were dull to percussion, but no definite fluid wave or shifting dullness could be demonstrated. The lower extremities showed varicose veins and pitting edema to the knees. On vaginal examination there was some pain on moving the cervix, and masses could be felt in the lateral vaults. The fundi showed arteriovenous nicking, but were otherwise normal.

The temperature, pulse and respirations were normal.

Examination of the urine was negative. Examination of the blood showed a red-cell count of 3,120,000 with a hemoglobin of 10 gm. (photoelectric-cell technic), and a white-cell count of 5000 with 72 per cent polymorphonuclears. A blood film showed moderate achromia of the red cells, with some anisocytosis.

The van den Bergh was approximately 1.5 to 2.0 mg. per 100 cc. biphasic, and a bromsulfalein test showed 90 per cent retention of the dye in the serum. Takata–Ara and formol-gel tests were positive. The basal metabolic rate was + 26 per cent on admission, but gradually fell to + 5 per cent on the day of discharge. A blood Hinton test was negative.

X-ray examination of the chest was negative except for a high diaphragm. The esophagus showed small varices in its lower third. A flat abdominal plate showed a large soft-tissue mass in the left upper quadrant, consistent with a large spleen, which displaced the stomach to the right. The liver shadow appeared smaller than usual.

The patient asked to go home and was discharged on the tenth hospital day.

Second Admission (thirteen months later). In the interval the patient was forced to restrict her activity to light housework and was unable to walk far because of dyspnea. Gradually the abdomen increased in size, ankle edema became more noticeable and the jaundice intensified. In the latter months the urine had become brown, and she suffered from anorexia and cramps in the left leg that were similar to those in the left arm.

The additional findings noted on physical examination were as follows: The skin was light yellow, and the respiratory movements were short and rapid. The tongue was large and thick, the hair fine, but oily. Rales were heard at the lung bases. The abdomen was protuberant, with numerous telangiectases and striae over its surface. The pouting, blue umbilicus overlay a slightly tender hernial opening 4 cm. in diameter. The abdomen was tender throughout, and the liver and spleen were considered to be enlarged. A ballotable mass was present in each upper quadrant, and both extended down to the umbilical line. Shifting dullness was demonstrable. There was pitting edema of the legs and of the sacrum up to the

second lumbar vertebra. Pelvic examination showed an atrophic vagina, with adhesive bands constricting the lumen, and a small cystocele and rectocele. The cervix was small, firm and lacerated; the vaults were clear. Hemorrhoid varices were present.

Examination of the urine showed a + test for bile on two occasions. Examination of the blood was unchanged. The van den Bergh test was 5.8 mg. per 100 cc. biphasic; the bromsulfalein test showed 70 per cent retention, and the formol-gel test was positive. The serum protein was 6.6 gm. per 100 cc., and the uric acid 2.5 mg. The blood calcium was 8.3 mg. per 100 cc., the phosphorus 1.6 mg. and the phosphatase 21.3 units. The bleeding time was 4 minutes, the clotting time 14 minutes.

X-ray studies showed varices in the lower third of the esophagus and a high diaphragm. A Graham test was negative.

An electrocardiogram was within normal limits. During hospitalization the patient ran a spiking temperature up to 100°F., and on the ninth day had a profuse nosebleed that was stopped by adrenalin. She refused abdominal paracentesis and was discharged three weeks after admission, her condition unchanged.

Final Admission (three months later). After discharge the jaundice and edema gradually increased, and the abdomen became more protuberant. She had spent the last four weeks in bed and on the night before admission had had a severe epistaxis that lasted until morning.

On examination the patient was not dyspneic, but respirations were rapid. The skin was dry and deep yellow, and bruises were present on the left cheek and ear. There was pitting edema to the clavicles. Clotted blood was present in the left nostril, and there was evidence of recent bleeding from the gums. The right chest, except at the apex, was flat to percussion, with diminished breath sounds, and a few moist rales were heard at the left lung base. The protuberant abdomen showed a caput medusae and a marked fluid wave. Because of the marked ascites, no organs could be felt. The temperature was 98.8°F., and the pulse 92.

Examination of the urine showed a ++ test for albumin, and a ++++ foam test for bile. Examination of the blood showed a red-cell count of 2,160,000 with a hemoglobin of 50 per cent, and a white-cell count of 19,550 with 90 per cent polymorphonuclears. The serum van den Bergh was 15.7 mg. per 100 cc. biphasic, the nonprotein nitrogen of the blood serum 38 mg., and the chlorides 93.3 mg. The prothrombin time was 29 seconds (normal 22 seconds), and the cell volume 28.5 per cent. Examination of the stools was negative.

An abdominal paracentesis on the day of admission showed grossly bloody fluid. The procedure was stopped. The patient went rapidly downhill and died on the fifth hospital day.

Differential Diagnosis

Dr. Wyman Richardson: One year before admission the patient first noticed non-radiating, squeezing precordial pain aggravated by exercise and relieved by a few minutes' rest. Although this is the first symptom recorded, we hear nothing about it in the rest of the report. I must say that after reading the first paragraph I did not want to try to figure out a definite diagnosis. However, after reading the rest of the history and taking a bird's-eye view of the whole thing from first to last, taking care not to get bothered by a lot of discrepancies, one can say that this patient died of liver failure and presumably of cirrhosis of the liver. I do not see why most of the symptoms cannot be explained by ordinary cirrhosis of the liver. I believe that is what this patient had. However, one has to consider, perhaps, one or two other possibilities. In the first place, did she have some sort of malignant tumor? When malignant tumor involves the liver, by the time that it does so sufficiently to give a considerable number of symptoms the progress is very rapidly downhill, and one would therefore not expect a story so long as this. The presence of masses on physical examination brings up the question of some sort of tumor, but the masses seemed to come and go in a manner that leaves one doubtful whether any definite tumor masses were actually palpated. Someone felt a nodular liver. I find it very difficult to determine by palpation through the rectus muscle whether a liver is nodular. Knowing well that primary tumors of the liver usually develop on top of cirrhosis of the liver, and that cancer of the biliary tract usually develops on top of a chronically inflamed gall bladder containing stones, I believe that this patient did not have malignant tumor.

Quite often the question of cardiac cirrhosis is considered. I am always getting confused by it. One should consider the possibility that the patient had had long-standing circulatory failure, as a result of which she developed cirrhosis of the liver. It is my impression that cardiac cirrhosis develops in patients with long-standing failure of the right heart, which is not the case in this patient. The edema began only three weeks before

admission. If it is not cardiac and is evidence of liver failure, it indicates a bad prognosis. The other thing that suggests heart failure is the story of precordial pain. Nothing is said about it except one sentence, and although we are led to believe that she had more than one attack of nonradiating pain we must put that aside in the absence of any further evidence of heart failure. The initial symptom was dyspnea. We know she was obese, which probably accounts for the dyspnea.

Now as to other types of cirrhosis — are we going to differentiate alcoholic from portal cirrhosis? There was no history of alcoholism, and if the patient had cirrhosis, I should say that it is what we ordinarily speak of as portal cirrhosis. We must think also of toxic hepatitis with consequent liver distortion and liver failure. There is no clear-cut attack of acute jaundice, and the history is not suggestive of such a condition. We do, however, have to consider the possibility of some primary liver disease, such as cirrhosis, with terminal evidence of necrosis of the liver. Syphilis of the liver must also be considered. The only thing that suggested it is the history of miscarriages; against it we have the negative blood Hinton test. I am inclined to favor the evidence given by the latter.

Finally, should we consider some condition that causes venous obstruction? Thrombosis of the splenic and portal veins or thrombosis involving venous circulation to such an extent as to produce edema and ascites and also varicosities is a possibility. Nothing in this patient, however, suggests primary thrombosis to me. If we do not go into the history in detail, it is consistent with cirrhosis of the liver in an Italian — and we know that Italians very commonly have cirrhosis of the liver; I should say that this patient had portal cirrhosis of the liver, with a question of terminal necrosis to explain the rapid fatal termination.

I want to speak of two additional findings. One is the question of calcium, phosphorus, and phosphatase. In discussing these cases I have often found it of great advantage not to know too much, and I hope it is going to be an advantage to me now because I cannot explain these rather curious findings of low calcium and low phosphorus. Usually if the calcium is low the phosphorus is correspondingly high, and vice versa. I think one might assume that this patient had digestive disturbances for a long period, and that she had difficulty with the absorption of fat and also, partly as a consequence of that difficulty, with absorption of calcium; in addition she had difficulty, perhaps, in absorbing some of the fat-soluble vitamins. That might explain a reduced calcium somewhat in the way that it occurs in idiopathic steatorrhea. If x-ray studies of the bones had been taken, they might have shown some definite evidence of osteoporosis, but they would not explain to me a low phosphorus. The low calcium level may also account for the frequent muscular cramps, because it approached what we see in tetany. The phosphatase would ordinarily mean that osteoblastic activity was going on, but there is no reason to believe that such a phenomenon existed in this patient. I believe that the phosphatase determination was suggested to differentiate obstructive from intrahepatic jaundice. Just why the phosphatase is elevated in liver disease I do not know. So much for that, which is little enough.

I considered the other question, — the possibility of gallstones, — because of the knifelike pain earlier in the history. Nothing more is said about it, and I do not believe that this patient had obstructive jaundice with subsequent liver damage. I do not see why it is not a straightforward case of cirrhosis of the liver.

Dr. Tracy B. Mallory: I should like to ask Dr. Jones to comment on the phosphatase figures.

Dr. Chester M. Jones: Ivy* recently made the statement that if the phosphatase is moderately high, it shows benign obstruction; very high, obstruction due to cancer. I should think that this was at the edge of being a really high figure. In a large group of cases with jaundice, most of the patients do not have bone lesions but intrahepatic disease; as I have said, those who have moderately high phosphatase values are apt to have benign or malignant obstruction, and the ones with very high values almost always have cancer. A high phosphatase level occurs infrequently without any bone involvement, also osteoporosis in chronic jaundice cases. I think the explanation Dr. Richardson gave is as good as any. We can assume that the bile salts are not produced normally, fat absorption is not normal, and therefore there is interference with the absorption of calcium.

Dr. Aubrey O. Hampton: Have you seen a normal Graham test in a patient with varices in the esophagus?

Dr. Jones: Yes, I think so. Sometimes a nearly normal dye test is present even when there are varices in the esophagus.

Dr. George W. Holmes: This patient has rather typical shadows consistent with varices. Varices usually mean cirrhosis of the liver. Al-

*Ivy, Andrew C.: personal communication.

though they may be present as a congenital condition or from thrombosis of the splenic vein, the great majority of our cases have had cirrhosis. It is fairly easy to point out the enlarged mass in the left upper quadrant that was interpreted as being spleen and that in all probability is spleen. We can be sure that the patient had varices and an enlarged spleen. The small liver is not so easily demonstrated. In fact x-ray determination of the size of the liver is never very accurate. Strangely enough one can always see the liver better by fluoroscope than on films, and I should be willing to accept that interpretation. Later on it was said that the liver was large. That interested me. I do not know whether a cirrhotic liver that has once become small can subsequently enlarge. I think we ought to consider more seriously the possibility of malignant tumor.

Dr. Richardson: Was the enlargement of the liver an x-ray interpretation?

Dr. Holmes: No, that was clinical.

Dr. Richardson: I think that can be disregarded.

Dr. Holmes: Perhaps so. I am giving the clinicians more credit than you are.

Dr. Mallory: It is fair to point out that on both second and third entries the patient had a great deal of ascites. On one occasion she refused to be tapped, and on another the tap was stopped because of hemorrhage. The only physical examination when the abdominal cavity was not full of fluid was therefore the first one.

Dr. Jones: Sometime a small liver on top of a lot of ascitic fluid may be readily palpable.

Dr. Mallory: You are not changing your opinion, Dr. Richardson?

Dr. Richardson: No.

Dr. Mallory: Does anyone want to disagree with him?

Dr. Jones: I should like to consider hepatoma superimposed on a cirrhosis. I see no reason to doubt cirrhosis, but I think one ought to include the distinct possibility of intrahepatic malignant disease.

Clinical Diagnoses

Cirrhosis of liver.
Generalized anasarca.

Dr. Richardson's Diagnosis

Portal cirrhosis of liver.

Anatomical Diagnoses

Primary cancer of the liver, combined type: adenocarcinoma and hepatoma.
Portal cirrhosis of the liver.
Anasarca.
Icterus, marked.
Splenomegaly.
Varices of esophageal and hemorrhoidal veins, venae breviae and veins of lateral abdominal wall.
Umbilical hernia.
Obesity.

Pathological Discussion

Dr. Mallory: The post-mortem examination showed a small liver — 1225 gm. — but a very grossly nodular one. I think the nodules could have been felt. The spleen was much enlarged — 700 gm. There were very marked esophageal varices. Both the splenic and portal veins were dilated. There was a considerable amount of grossly bloody ascitic fluid, and 1500 cc. of grossly bloody fluid in the right pleural cavity. The peritoneal surfaces, however, were perfectly smooth. Some of the large nodules in the liver were soft and necrotic, and between them were many firm nodules and granules of comparatively small size. The gross appearance was unmistakably that of a primary cancer of the liver. Microscopic examination confirms this diagnosis but shows something that I have never seen before. There are two kinds of primary cancer of the liver — the hepatomas that arise from the liver cells, and the adenocarcinomas that arise from the intrahepatic bile ducts. In this tumor some areas show well-differentiated adenocarcinoma, obviously of the bile-duct type, others show typical hepatoma; one can find single microscopic fields in which both types of cells and transitions from one to the other are visible. So I have to call this a primary cancer of the liver, but I cannot call it a simple hepatoma.

Dr. Richardson's point that one would expect a hepatoma with nodules large enough to be felt to progress more rapidly than this is in accord with our experience in this hospital. Yet we have seen hepatomas in which metastases were found in bones three or four years before the patient died. In this case we found no distant metastases, but a few retroperitoneal nodes showed involvement.

Dr. Eugene R. Sullivan: What was the explanation of the bloody fluid in the right pleural cavity?

Dr. Mallory: I should guess that they hit a vein in attempting the abdominal tap, and that the red cells passed through the diaphragm from the abdomen to the pleural cavity. I am convinced that there is a fairly free passage of fluid through the diaphragm in many cases.

CASE 26442

Presentation of Case

First Admission. A forty-nine-year-old American housewife entered the hospital complaining of pruritus and jaundice of three weeks' duration.

Approximately eight months before admission the patient became fatigued and nervous, and suffered from insomnia. One month later she developed marked pruritus and a skin rash described as forming "welts," which were most noticeable on the abdomen. These symptoms were soon followed by nausea and vomiting and later by jaundice, clay-colored stools and an increase in the vomiting. She entered another hospital, where a laparotomy was performed. The gall bladder and common duct were said to be normal and contained no stones. The common duct, however, contained practically no bile, but nothing abnormal was noted on passing a probe into the hepatic ducts. Postoperatively the wound drained very little, and the jaundice diminished. Six weeks postoperatively the wound suddenly drained a large amount of bile, and at the same time the stools became normal in color. After this the jaundice disappeared, and the patient gained weight rapidly. She remained well until two months before admission, when weakness, fatigue and pruritus returned. One month later the stools again became clay-colored and the jaundice returned, accompanied by "indigestion" without nausea or vomiting. Within one week normal color returned to the stools, but the jaundice and pruritus increased. During the two weeks before admission she remained in bed a great part of the time suffering from anorexia, chills, fever and sweating, with an intermittent cough and "bile-stained" sputum. The urine became red, and there was burning on micturition. She had lost 23 pounds in the previous seven months. There was no history of excessive alcoholic consumption.

The patient had had the usual childhood diseases. Her mother had died of "gallstones" at fifty-seven.

Examination showed that the patient was well-developed, but had obviously lost weight. The skin was dry and deeply jaundiced, and many acne-like lesions covered with scabs were present over the arms, chest, back and abdomen. Examination of the heart and lungs was negative; the blood pressure was 124 systolic, 66 diastolic. There was a well-healed right paramedian surgical incision in the epigastrium. The liver was not enlarged to percussion, but could be felt two fingerbreadths below the costal margin on deep inspiration. Its firm, smooth edge was acutely tender in the midclavicular line. The spleen was just palpable, but not enlarged to percussion. No other masses were palpable, and there were no signs of peritoneal fluid. Examination of the fundi and nervous system was negative.

The temperature, pulse and respirations were normal.

Examination of the urine showed a + test for albumin, +++ test for bile, and 35 white blood cells per high-power field, with urobilinogen present in dilutions up to 1:170. Examination of the blood showed a red-cell count of 3,750,000 with a hemoglobin of 11.9 gm. (photoelectric-cell technic), and a white-cell count of 6000. The white-cell count remained fairly constant during hospitalization except for two readings of 20,900 and 10,700. A red-cell fragility test was within normal limits, and the reticulocyte count was 0.7 per cent. The hematocrit reading was 34 per cent, and the red-cell volume 8.1 cu. microns. The stools varied from yellow to brown and were guaiac negative. A blood Hinton test was negative. The plasma prothrombin was 89.1 per cent normal, the vitamin C 1.05 mg. per 100 cc., the vitamin A 0.2 units, and the total carotenoids normal.

The patient remained in the hospital for the next seven weeks. Her general condition improved, although the serum van den Bergh varied between 12 and 18 mg. per 100 cc. On duodenal drainage rich lemon-yellow bile was obtained, and the sediment showed casts of bile pigment, a few clumps of bilirubin and occasional crystals of cholesterol. Two weeks after admission the urine was free from bile, but two weeks later the test was +++. One month after admission a peritoneoscopic examination was performed. The liver was found to be grayish-green and relatively smooth, though one observer thought that the surface was slightly irregular. A biopsy specimen was taken, and the pathological examination showed bile stasis and the slightest possible trace of biliary cirrhosis. The sedimentation rate was 1 mm. in 60 minutes, but a week later had risen to 58 mm. Bromsulfalein tests showed 50 per cent, 90 per cent and finally, on the day before discharge, 100 per cent retention of the dye in the serum. A quantitative blood bilirubin was 6.8 mg. per 100 cc. at the time of the last liver-function test. The patient was given four blood transfusions during hospitalization.

Second Admission (one month later). After discharge the patient did not improve to any extent. Weakness and pruritus continued, and although her appetite was fairly good, she had frequent attacks of nausea. In addition she developed a vague right-upper-quadrant abdominal pain and a persistent hard cough with white ropy sputum.

At first the stools had been yellow, then yellow-green, and finally, the week before admission, brown. The urine was usually mahogany colored. Two weeks before admission the abdomen seemed to become more deeply pigmented. She had lost 4 pounds in weight since discharge.

There was little change in the physical examination. The skin was dark yellow, and the liver was palpable 5 cm. below the costal margin. Rales were heard at the lung bases.

Examination of the urine showed a + test for albumin and ++ test for bile, with 100 white blood cells per high-power field. Examination of the blood showed a white-cell count of 13,500 and a red-cell count of 3,770,000, with a sedimentation rate of 57 mm. in one hour and a cell volume of 40.3 per cent. The serum van den Bergh was 10.2 mg. per 100 cc., and the serum protein 5.5 gm. A bromsulfalein test showed 90 per cent retention of the dye, and the prothrombin time was 16 seconds. The stools were brown, contained no fat and were guaiac negative. Duodenal drainage yielded a lemon-yellow material, containing many bilirubin casts in mucus, which was obviously lighter than normal.

X-ray examination of the chest and abdomen was negative.

On the seventh hospital day an operation was performed.

Differential Diagnosis

Dr. Richard H. Sweet: I do not know when I have approached one of these problems with so great a feeling of inadequacy, in spite of the fact that I have spent much time in studying the abstract.

"The patient remained well until two months before admission, when weakness, fatigue and pruritus returned." As I read over the story that statement interested me, because I do not recall seeing a case of obstructive jaundice that produced itching in which the itching preceded the jaundice; but that is what happened in this patient.

Do the x-ray films show anything?

Dr. Aubrey O. Hampton: I assume that this film was taken to show a stone in the common duct, and it does not show anything. I should not be surprised if a stone were there, however. X-ray study does not rule out stones in the common duct, because we seem to miss most of them. The chest appears normal. The liver and spleen so far as I can tell are not abnormal. Both kidneys are low. The right kidney is lower than the left, and one might assume that it is displaced downward by an enlarged liver.

Dr. Sweet: I have made a lot of notes, and by a long and devious route I shall try to lead you to a peculiar conclusion. First, are we dealing with obstructive jaundice? It is obvious that we are, because of the clay-colored stools, the urine and the jaundice. The jaundice was not progressive; it was not complete enough to cause absence of bile from the intestinal tract. It waxed and waned. The stools were sometimes clay colored, sometimes yellow and sometimes brown, back and forth. The jaundice cleared and appeared again. I get the impression from reading the history that it tended to become more persistent and less remittent as the disease progressed. The urine had bile and sometimes no bile, and at times urobilinogen was present, findings which indicate that the obstruction was not complete.

Secondly, is there evidence of obstruction to the common duct? We are forced to conclude that there is not, on the basis of most of the data, although if one reads the history superficially there ought to be a common duct stone. I place a great deal of reliance on the statements made by the surgeon at the first operation: There was a normal gall bladder, a normal common duct, perhaps a little smaller than average, which contained no bile, or very little, no evidence of inflammation, no stones and no edema. This finding of very little bile in the common duct interested me, if it was an accurate observation. The behavior of the wound, I cannot explain. A logical explanation would be that a stone had plugged the common duct again, so that bile had backed up and leaked into the wound and out from the wound six weeks later. However, they did not find a stone or a dilated duct, and there is no record of waxing or waning of the symptoms of obstruction during this period. The duodenal-drainage findings — the cholesterol crystals and the bile-pigment casts — might mean a stone, but I think these might also be found in any case of stasis in the common duct where the bile tends to back up temporarily for any reason.

Is there any evidence against stone in the common duct? I am relying a lot on the first operation. There was no pain until toward the end. Before the last operation there was a dull, vague sort of pain in the right upper quadrant but none of the attacks that one usually associates with common-duct stone, although we all see cases occasionally without any pain whatever.

The loss of weight interests me. I have the impression that it was progressive and did not quite match the coming and going of the other symptoms. At times she had nausea and vomit-

ing, but at times she felt well for a period of several months. The weight loss seems to have continued. Whether or not that means cancer, I do not know.

There is very little evidence to suggest obstruction of the ducts from without, rather than from within — for example, by carcinoma of the pancreas or the ampulla. The obstruction was too variable, for one thing, although one occasionally sees in cancer of the head of the pancreas complete obstruction for a period, followed by bile in the stools from temporary letting up of the obstruction. Still, I do not get the impression that there was any such thing here. There was no palpable gall bladder, for example.

Is there any evidence of obstruction to the major hepatic ducts by stones or by lymph nodes or by a mass in the portal fissure? At the first operation these ducts were probed and were found to be patent. If a stone large enough to cause jaundice existed, the chances are that it would fall down into the common duct at some time or other and become more manifest. Lymph nodes at the portal fissure, lymphoma or some other tumor would tend to cause a more progressive type of jaundice than this. I thought of some queer thing such as aneurysm of the hepatic artery, but I do not see why that also would not cause a progressive type of obstruction. Infection might well account for the intermittent type of obstruction. The waxing and waning of an inflammatory process, with changes in the degree of swelling of the ducts and the amount of mucus secretion, would account for the exacerbations and intermissions. Any of the causes that I have mentioned, if they did not result in a complete obstruction, might therefore lead, because of cholangitis, to intermittent obstruction. I do not see any way to decide whether that was so or not. There is plenty of evidence for cholangitis. The patient had chills, fever and intermission of jaundice, with variation in the degree of swelling and tenderness of the liver. She had a positive biopsy specimen, and the duodenal-drainage findings, as I mentioned before, might go with that picture. There was some indication of liver damage, but the evidence seems largely to be that the liver function kept up quite well except for the bromsulfalein excretion, which was consistently low.

Could this be a case of cholangitis alone — without stone or tumor? In the experience of the surgeon at least, such a case is exceedingly rare. Sometimes we see it from a choledochoenteric fistula with communication between the common duct or the gall bladder and the intestinal tract that allows infection to go through a passage where there is no valvular action, such as is normally present in the ampulla of Vater. This patient probably had nothing like that.

What about other causes of cholangitis and infection in the small bile ducts? I thought of things like hypertrophic biliary cirrhosis, Hanot's type. I do not know much about it. It is apt to occur in young people, but it may cause all these symptoms.

Intermittent obstruction from a diverticulum of the common duct that filled with something and released itself again is another rare possibility.

As I thought about the case I also wondered if there might be something infiltrating along the biliary ducts, — that is, the lesser ducts in the liver, — such as tuberculosis, miliary tuberculosis of the liver. But the occurrence of miliary tuberculosis of the liver with a negative chest plate seems rather fantastic. The patient's cough seems to be stressed in the history, but the chest plate ruled out any such possibility. Syphilis of the liver seems improbable, because she had a negative blood Hinton test. A further possibility of obstruction to the lesser bile duct system, that is, the radicles within the liver, might be an infiltrating malignant process along the ducts with a superimposed cholangitis. Against that possibility we have the result of the examination of the biopsy specimen, but of course the latter was taken from the very edge of the liver and might not have reached the focus of disease. There was a steady loss in weight. With a cholangitis syndrome, evidence of liver damage, — not very severe, — fatigue, anorexia and so forth, it is rather tempting to say that the patient had cancer.

That brings us down to the question of why the surgeon operated the second time. I do not know why he did. I should guess that he thought he was going to find a stone in the common duct, but think he did not. There were biliary cirrhosis and cholangitis; these were obvious. I should think that there was no surgical or operable lesion. I believe that no stone was present, but there might have been something like primary carcinoma of the bile ducts.

Dr. Chester M. Jones: I have forgotten how many weeks this patient was in the hospital, but when Dr. Bartlett asked me to see the patient with him, I experienced much the same difficulty that Dr. Sweet did, only it took a good many days instead of a few minutes. Many things came up before we decided to operate. Two things that I thought important enough to be brought out were the curious onset of the disease and the itching before the jaundice. As a rule these symp-

toms mean intrahepatic disease. Not infrequently patients with cirrhosis of any type may have itching before they have any other symptom. The itching consequently made me suspect that the patient had some intrahepatic disease at the beginning and that she might well have had a curious type of catarrhal jaundice or infection of the liver. In retrospect I should still consider that a probability, although no one can prove it. When we examined the patient one other finding, that Dr. Sweet has commented on several times, was that she became more and more jaundiced, although the stools contained bile. I have been impressed with that as an important criterion against operation. To me it means intrahepatic disease unless one has clear evidence of partial obstruction of the duct. As a rule, surgery is contraindicated in such cases. Deep jaundice associated with brown stools must mean serious damage to the liver, although it may be transient. It was on that basis that I believed, and Dr. Bartlett was of the same opinion, that operation should be deferred. We sent the patient home with instructions to return if she did not get better. She did not improve and returned, stating that she had had clay-colored stools for several days prior to the re-entry. The second duodenal drainage showed less bile than the first. On that basis we decided to operate. I believed that there were two possibilities: trauma to the common duct at the time of the first operation and a stenosing cholangitis.

Dr. Sweet: I did not consider the question of trauma produced at the first operation because she had the same type of symptoms before both operations.

Dr. Marshall K. Bartlett: Dr. Jones has very well summed up our reasons for operating. There were, of course, adhesions around the gall bladder. When freed, the gall bladder was a little thickened, and contained a small amount of dark-brown bile. We exposed the common duct, which was considerably dilated to a point just below the entrance to the cystic duct. From there on it was normal in size. We opened it and found a good deal of bile under pressure and a constriction just below the point where the cystic duct came in. A plastic procedure seemed indicated and was carried out.

Dr. Jones: I should like to add that Dr. Bartlett deserves credit for adhering to his impression that he would eventually be forced to operate.

Dr. Bartlett: We operated because the prognosis seemed unfavorable if it was hepatic disease; we also thought that there was a slight but real possibility that something might have occurred at the first operation that could be corrected.

Clinical Diagnosis

Stricture of common duct?
Stenosing cholangitis?

Dr. Sweet's Diagnoses

Biliary cirrhosis.
Recurrent acute and subacute cholangitis.
A stenosing process in the biliary radicles, possibly carcinomatous.

Anatomical Diagnoses

Traumatic stricture of the common duct.
Intrahepatic bile stasis.

Pathological Discussion

Dr. Tracy B. Mallory: I was asked to see this patient on the ward and I am afraid my reaction is evidence that the pathologist's mind works in dark and devious ways. I could not explain the picture satisfactorily on any natural cause, so I immediately suspected the surgeon. At that time I wrote: "Review of this patient's history, biased perhaps by having previously examined a fragment of her liver microscopically, inclines me to put as my first choice in diagnosis a partial traumatic stricture of the common duct, rather than primary hepatic disease."

Dr. Bartlett took a second biopsy specimen of the liver at the time of his operation; this showed the same picture as the earlier one, namely, changes characteristic of prolonged biliary obstruction. There had been no detectable progression of the lesion in the interval.

The patient made a rapid convalescence and is now, several months later, apparently completely well. Needless to say the development of the stricture reflects no discredit on the first surgeon. It is a complication, fortunately a rare one, which may follow any exploration of the common duct.

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Communications should be addressed to the *New England Journal of Medicine*, 8 Fenway, Boston, Massachusetts.

SELECTIVE SERVICE REGISTRANTS AND VENEREAL-DISEASE PREVENTION

The recent agreement between the War Department, the Navy Department, the Federal Security Agency and state health departments for the control of venereal diseases, which appears in this issue of the *Journal*, recalls the great disability caused in World War I by these diseases — the third highest cause of disability. More than 6,500,000 man-days were lost to the army because of these infections, and about 350,000 officers and men were treated. This was a tremendous waste, and much of it could have been avoided if the communities in which these infections occurred had had proper venereal-disease-control measures and had enforced them.

Proper planning now will do much to prevent a repetition in the present crisis of the experiences of the last war. The 16,500,000 registrants in this first peacetime draft constitute the age group in which are concentrated most of the infectious cases of syphilis and gonorrhea, and the United States Public Health Service will provide each of the registrants with a leaflet containing facts about these diseases and their relation to national defense, urging that each have a blood test for syphilis as a part of an initial check on physical fitness. Blood tests of this group will contribute to the discovery of a large number of cases of syphilis in the stage of the disease in which treatment is most effective, and such treatment will result in bringing nearer by many years the control of syphilis in the whole population, as well as benefiting the individual registrant. The immediate discovery and treatment of syphilis among registrants will increase the reservoir of men available for active and efficient duty both in the armed forces and in industry. If, in addition to the examination and blood testing of registrants, there is an adequate control of venereal disease in areas where armed forces and national-defense employees are concentrated, there should be a marked reduction in the number of new infections.

This educational and control program, sponsored by the United States Public Health Service, in co-operation with state and local health authorities, together with the aid of physicians everywhere, will, as Assistant Surgeon General Vonderlehr states, "contribute substantially to the physical fitness of men in the armed and industrial defense forces" and will help this country to benefit tremendously by the lessons of the last world war.

TRICHINOSIS AGAIN

The United States Public Health Service is continuing to emphasize the past and present incidence of trichinosis, and to indicate where control measures against the disease are most likely to be effective. The *Journal* has not infrequently commented on this problem in public health, and pointed out that it is as formidable here in New England as it is anywhere else. Many local physicians first learned to recognize prevalence of trichi-

nosis in the period between 1920 and 1930, and yet Dr. Henry I. Bowditch[1] wrote in 1877: "I would suggest the same doubt about trichiniasis being a new disease as about cerebrospinal meningitis; because there is no doubt, from morbid specimens existing in European cabinets, that trichiniasis existed many years ago, without being recognized in the complete manner which it is at the present day." Why this disease became so generally overlooked or disregarded during the next half century is not easy to understand.

Human trichinosis comes from eating uncooked or inadequately cooked pork. Swine trichinosis arises primarily from feeding uncooked garbage containing pork scraps, either from tables or markets, to the pigs. The direct method of prevention would therefore be either to cook the garbage or to keep the pork scraps out of it before allowing it to be used as pig food. It is hard to refrain from any opportunity to revile the common rat, and one might also appease his sanitary conscience by casting some aspersion on the filthiness of many pigsties; the nucleus of the problem, however, concerns itself with the use of uncooked garbage in the swine industry. In many cities and towns the only improvements effected in the methods of garbage disposal have concerned themselves with designs for garbage trucks. One may freely admit the degree of progress manifested in a comparison of the old-fashioned swill wagon with the modern streamline self-hoisting tanks, but when they get to their ultimate destinations, "pigs is pigs," and they still get trichinosis.

In a recent issue of *Public Health Reports*, Wright[2] reports the result of a survey of seven hundred and sixty-four cities of 10,000 population or over. Of the four hundred and three cities that responded, only twenty-four indicated that all or a part of the garbage was cooked before being fed to swine. The New England states lead all other geographic areas in the number of cities using the hog-feeding method of garbage disposal, and consequently they have, as a group, the next to the highest morbidity rate for the disease. Because many hogs, maintained on municipal garbage of this sort, are slaughtered and consumed locally, it is probable that many cities maintain within their own borders the vicious circle that continues the disease among their citizens.

The Bureau of Animal Industry, of the United States Department of Agriculture, has no jurisdiction over products which do not cross interstate lines, although it does much in an advisory and supervisory way. Hence, proper conduct of the local swine industry remains a challenge to the administrators of our towns and cities. Local government used to be at its best in New England!

References

1. Bowditch, H. I.: *Public Hygiene in America.* 498 pp. Boston: Little, Brown and Company, 1877. P. 96.
2. Wright, W. H.: A survey of municipal garbage disposal methods as related to the spread of trichinosis. XIV. Studies on trichinosis. *Pub. Health Rep.* 55:1069-1077, 1940.

MEDICAL EPONYM

Erb's Paralysis

"Ueber eine eigenthümliche Localisation von Lähmungen im Plexus brachialis [A Peculiar Localization of Paralyses in the Brachial Plexus]" was discussed by Professor Wilhelm Heinrich Erb (1840–1921) before the Society of Natural History and Medicine at Heidelberg on November 10, 1874, and published in the *Verhandlungen des Naturhistorisch-Medicinischen Vereins zu Heidelberg* (Neue Folge 1:130–136, 1877). A portion of the translation follows:

> On looking through my case histories of peripheral paralyses, I have found a number of cases of *paralysis of the upper extremity,* which were marked by a striking correspondence and grouping of the muscles involved. . . . These paralyses were *not* localized in any one main trunk of the brachial plexus, but rather involved certain muscles, always the same ones, which are innervated by the various branches (with the exception of the ulnar nerve) of the plexus. . . . It would seem . . . that *the lesion . . . is located in the fifth or sixth cervical nerves (or their anterior branches)* or perhaps at their point of junction. . . . A further category of similar cases is formed by certain types of the *obstetric paralyses* which are not very uncommon in the newborn. . . . It seems probable . . . that the use of the so-called Prague grip which is usually necessary in version and extraction is the commonest cause of this special form of "obstetric paralysis." The fingers, grasping the neck like a fork, may, if the obstetrician's procedure is somewhat energetic, so compress the roots or the plexus itself that a more or less stubborn paralysis results.

R. W. B.

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S. TITUS, M.D., *Secretary*
330 Dartmouth Street
Boston

PREMATURE LABOR AND DELIVERY IN A DIABETIC PATIENT

Mrs. M.B., a twenty-one-year-old primipara, was first seen in the office on April 12, 1932, when she was approximately five months pregnant.

The family history was non-contributory. The patient's past history included scarlet fever and chicken pox. She had undergone an appendectomy and a tonsillectomy. Diabetes was discovered in 1931 and was controlled by 28 units of insulin daily. Catamenia began at eleven, were regular with a twenty-eight-day cycle and lasted four to five days. The last normal period began on October 27, 1931, making the expected date of confinement August 3.

Physical examination revealed a well-developed and well-nourished young woman. The weight was 129 pounds, a gain of 9 pounds since the summer. The heart was not enlarged; there were no murmurs. The lungs were clear and resonant; there were no rales. The blood pressure was 100 systolic, 54 diastolic. Abdominal examination revealed the fundus to be 23 cm. above the symphysis; the position of the fetus was not determined. The fetal heart was heard. Vaginal examination showed the cervix to be soft.

During the remaining months of pregnancy the patient was seen frequently by the obstetrician and a specialist in diabetes. The insulin dosage was increased to control the diabetes. A blood-sugar test on May 31 showed 200 mg. per 100 cc., and another on June 23 showed 140 mg.

On June 30 the patient was seen in the office. At this time the fundus was 31.5 cm. above the symphysis. The fetal heart was heard. The patient's weight was 144 pounds, and the blood pressure 110 systolic, 60 diastolic.

On July 7, when the patient was approximately thirty-six weeks pregnant, she entered the hospital in desultory labor. A vaginal examination on admission revealed that the cervix was dilated sufficiently to admit two fingers, was not entirely taken up, and was stiff. Contractions continued off and on throughout the day, and on July 8 by a simple forceps operation the patient was delivered of an 8½ pound male infant. The convalescence was entirely uneventful.

At the time of final examination, on August 19, the patient was sugar-free. The weight was 111 pounds, the blood pressure was 112 systolic, 64 diastolic, and pelvic examination was negative.

Comment. Mild diabetic patients frequently start premature labor spontaneously; few go to term. Although this patient was only thirty-six weeks pregnant, the baby weighed 8½ pounds. She has since had a second baby, also born one month early, which was likewise the fat, edematous infant usually delivered by diabetic patients.

*A series of selected case histories by members of the section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the section.

MEDICAL POSTGRADUATE EXTENSION COURSES

The following sessions, given by the Massachusetts Medical Society in co-operation with the Massachusetts Department of Public Health, the United States Public Health Service and the Federal Children's Bureau, have been arranged for the week beginning November 4:

BARNSTABLE

Sunday, November 10, at 4:00 p.m., at the Cape Cod Hospital, Hyannis. Chemotherapy in the Treatment of Gonococcal Infection. Instructor: Oscar F. Cox. Donald E. Higgins, *Chairman.*

BRISTOL NORTH

Thursday, November 7, at 4:00 p.m., at the Morton Hospital, Taunton. Pediatric Case Discussions. Instructor: Harold L. Higgins. Lester E. Butler, *Chairman.*

BRISTOL SOUTH (New Bedford Section)

Friday, November 8, at 4:00 p.m., at St. Luke's Hospital, New Bedford. The Clinical Recognition of the Types of Jaundice and Recent Advances in Their Treatment. Instructor: Franz Ingelfinger. Robert H. Goodwin, *Chairman.*

ESSEX NORTH

Friday, November 8, at 4:30 p.m., at the Clover Hill Hospital, Lawrence. Management of Abdominal Distention. Instructor: Jacob Fine. John Parr, *Chairman.*

ESSEX SOUTH

Tuesday, November 5, at 4:00 p.m., in the Conference Room, Salem Hospital, Salem. Technic and Treatment of Primary, Secondary and Tertiary Syphilis. Instructor: C. Guy Lane. J. Robert Shaughnessy, *Chairman.*

MIDDLESEX NORTH

Friday, November 8, at 5:00 p.m., at St. John's Hospital, Lowell. Problems in Bronchoscopy. Instructor: Lyman G. Richards. William S. Lawler, *Chairman.*

PLYMOUTH

Tuesday, November 5, at 4:30 p.m., in the Nurses' Home of the Brockton Hospital, Brockton. Chemotherapy in the Treatment of Gonococcal Infection. Instructor: P. N. Papas. Walter H. Pulsifer, *Chairman.*

MISCELLANY

MEASURES FOR THE CONTROL OF THE VENEREAL DISEASES IN AREAS WHERE ARMED FORCES OR NATIONAL DEFENSE EMPLOYEES ARE CONCENTRATED

The following agreement was adopted by the Conference of State and Territorial Health Officers in May, 1940, and has since been approved by the Secretary of War, the Secretary of the Navy and the Administrator of the Federal Security Agency:

It is recognized that the following services should be developed by state and local health and police authorities in co-operation with the Medical Corps of the United States Army, the Bureau of Medicine and Surgery of the United States Navy, the United States Public Health Service and interested voluntary organizations:

1. Early diagnosis and adequate treatment by the Army and the Navy of enlisted personnel infected with venereal diseases.

2. Early diagnosis and treatment of the civilian population by the local health department.

3. When authentic information can be obtained as to the probable source of venereal-disease infection of military or naval personnel, the facts will be reported by medical officers of the Army or Navy to the state or local health authorities as may be required (familial contact with naval patients will not be reported). If additional authentic information is available as to extramarital contacts with diseased military or naval personnel during the communicable stage, this should also be reported.

4. All contacts of enlisted men with infected civilians to be reported to the medical officers in charge of the Army and Navy by the local or state health authorities.

5. Recalcitrant infected persons with communicable syphilis or gonorrhea to be forcibly isolated during the period of communicability; in civilian populations, it is the duty of the local health authorities to obtain the assistance of the local police authorities in enforcing such isolation.

6. Decrease so far as possible the opportunities for contacts with infected persons. The local police departments are responsible for the repression of commercialized and clandestine prostitution. The local health departments, the state health departments, the Public Health Service, the Army and the Navy will co-operate with the local police authorities in repressing prostitution.

7. An aggressive program of education both among enlisted personnel and the civilian population regarding the dangers of the venereal diseases, the methods for preventing these infections, and the steps which should be taken if a person suspects that he is infected.

8. The local police and health authorities, the state health departments, the Public Health Service, the Army and the Navy desire the assistance of representatives of the American Social Hygiene Association or affiliated social hygiene societies or other voluntary welfare organizations or groups in developing and stimulating public support for the above measures.

CORRESPONDENCE

DEPRIVATION OF LICENSES

To the Editor: The license of Dr. John A. Carter, of Highland Avenue, Malden, Massachusetts, was revoked by the Board of Registration in Medicine on October 17 because of conviction in court of abortion, and that of Dr. Maurice Goldberg, 12 Market Square, Amesbury, Massachusetts, was suspended for the period of one month because of participation in the production of termination of pregnancy.

STEPHEN RUSHMORE, M.D., *Secretary,*
Board of Registration in Medicine.

State House,
Boston.

NOTICES

ANNOUNCEMENT

LESTER S. KAHN, M.D., announces the opening of an office at 1673 Beacon Street, Brookline. He is retaining his office at 416 Marlboro Street, Boston.

BOSTON DOCTORS' SYMPHONY ORCHESTRA

The Boston Doctors' Symphony Orchestra will rehearse under Alexander Thiede, former concertmaster with the Cleveland Symphony Orchestra, every Thursday at 8:30 p.m. Those interested in becoming members should communicate with Dr. Julius Loman, Pelham Hall Hotel, Brookline (BEA 2430).

BOSTON SOCIETY OF BIOLOGISTS

The next meeting of the Boston Society of Biologists will be held at the Biological Laboratories, Divinity Avenue, Cambridge, on Wednesday, November 20, at 8:00 p.m.

PROGRAM

Observations on the Brown–Pearce Carcinoma in Roller Tile Tissue Cultures. Dr. Francis S. Cheever.
Growth and Differentiation in Plant Tissue Cultures. Dr. Folke Skoog.
Metabolism of Tissues Grown in Culture. Drs. Austin M. Brues and Hildegarde Wilson.
Inhibition of Growth in Vitro. Drs. Austin M. Brues and Joseph C. Aub.

WILLIAM HARVEY SOCIETY

The second lecture of the series sponsored by the Tufts College Medical School's William Harvey Society, "Experimental Studies in Pernicious Anemia: With particular reference to the changes in the nervous system," will be given by Dr. Maxwell M. Wintrobe, of Baltimore, in the auditorium of the Beth Israel Hospital, Boston, on Friday, November 8, at 8:00 p.m. Dr. William Dameshek, assistant professor of medicine at Tufts, will be chairman of the meeting.

PETER BENT BRIGHAM HOSPITAL

A joint medical and surgical clinic at the Peter Bent Brigham Hospital will be held on Wednesday, November 6, from 2:00 to 4:00 p.m. Drs. Joseph C. Aub and Francis C. Newton will speak, their subject being "Obesity." A clinicopathological conference, conducted by Dr. Elliott C. Cutler, will take place from 4:00 to 5:00 p.m.

Physicians and students are cordially invited to attend.

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The monthly clinical conference and meeting of the staff of the New England Hospital for Women and Children will be held in the classroom of the nurses' residence on Thursday, November 7, at 7:15 p.m. The subject "Clinical Allergy" will be considered. Dr. Eda A. Polcari will preside as chairman.

NEISSERIAN MEDICAL SOCIETY OF MASSACHUSETTS

The Neisserian Medical Society of Massachusetts will hold a dinner meeting in the Marine Room, Hotel Kenmore, Boston, on Wednesday, November 13, at 7:00 p.m.

PROGRAM

Dinner ($2.25).
Election of officers.
Report of the 1940 meeting of the American Neisserian Medical Society.
Gonorrhea and National Defense. Dr. P. S. Pelouze, of Philadelphia.
Five-minute reports from various members on activities in their respective communities.

All interested persons are cordially invited to attend.

NEW ENGLAND SOCIETY OF ANESTHESIOLOGY

The November meeting of the New England Society of Anesthesiology will be held at the Boston City Hospital on Tuesday, November 12, at 8:00 p.m. Dr. Albert Miller, of Providence, Rhode Island, will speak, his subject being "Mechanics of Gas Anesthesia."

The December meeting will be held at the Massachusetts General Hospital on Tuesday, December 10, at 8:00 p.m. Dr. M. J. Nicholson will speak on "Fractional Spinal Anesthesia."

POSTGRADUATE COURSE IN OBSTETRICS

The Department of Obstetrics and Gynecology of the University of Chicago and the Chicago Lying-in Hospital through the co-operation of the Children's Bureau, United States Department of Labor and the Illinois State Department of Public Health offers five postgraduate courses in obstetrics of four weeks each between January 6 and June 21. The beginning dates of each are: January 6, February 10, March 17, April 21 and May 26. All the members of the department and all services and units of the institution participate in the instruction. Only a limited number of postgraduate students are accepted for each period. A deposit of $25.00 is required, of which $10.00 is returned on completion of the course. All communications should be addressed to: Postgraduate Course, 5848 Drexel Avenue, Chicago, Illinois.

UNITED STATES NAVAL HOSPITAL

A change has been made in the program of medical meetings to be held at the United States Naval Hospital in Chelsea. The meeting scheduled for November 14 has been changed to November 13, and the subject will be "A Trip Through the Gastrointestinal Tract with the Fluoroscope" by Dr. Merrill C. Sosman.

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING SUNDAY, NOVEMBER 3

MONDAY, NOVEMBER 4

12:15–1:15 p.m. Clinicopathological conference. Peter Bent Brigham Hospital amphitheater.

TUESDAY, NOVEMBER 5

*9–10 a.m. Management of Pulmonary Abscess. Dr. R. H. Betts. Joseph H. Pratt Diagnostic Hospital.

12:15–1:15 p.m. Clinicoroentgenological conference. Peter Bent Brigham Hospital amphitheater.

WEDNESDAY, NOVEMBER 6

*9–10 a.m. Hospital case presentation. Dr. S. J. Thannhauser. Joseph H. Pratt Diagnostic Hospital.

*12 m. Clinicopathological conference. Children's Hospital.

*2–4 p.m. Obesity. Drs. J. C. Aub and F. C. Newton. Peter Bent Brigham Hospital.

THURSDAY, NOVEMBER 7

*8:30 a.m. Combined clinic of the medical, surgical, orthopedic and pediatric services of the Children's Hospital and the Peter Bent Brigham Hospital, at the Children's Hospital.

*9–10 a.m. Carcinoma of the Pancreas: Clinical review of cases. Dr. E. P. Engleman. Joseph H. Pratt Diagnostic Hospital.

7:15 p.m. Clinical Allergy. Monthly clinical conference and meeting of staff. New England Hospital for Women and Children.

FRIDAY, NOVEMBER 8

Society for Research in Child Development. Harvard Medical School.

*9–10 a.m. Experimental Studies in Pernicious Anemia. Dr. Maxwell M. Wintrobe. Joseph H. Pratt Diagnostic Hospital.

8 p.m. Experimental Studies in Pernicious Anemia. Dr. Wintrobe. William Harvey Society. Auditorium, Beth Israel Hospital.

*8:15 p.m. New England Heart Association. Boston Medical Library, 8 Fenway.

SATURDAY, NOVEMBER 9

Society for Research in Child Development. Harvard Medical School and Children's Hospital.

*9–10 a.m. Hospital case presentation. Dr. S. J. Thannhauser. Joseph H. Pratt Diagnostic Hospital.

*Open to the medical profession.

NOVEMBER 8, 15 and 22 — Thomas William Salmon Memorial Lectures. Page 692, issue of October 24.

NOVEMBER 12 — New England Society of Anesthesiology. Notice above.

NOVEMBER 13 — Neisserian Medical Society of Massachusetts. Notice above.

NOVEMBER 13 — United States Naval Hospital. Notice above.

NOVEMBER 13, 14 — New England Postgraduate Assembly. Cambridge, Massachusetts.

NOVEMBER 14 — Pentucket Association of Physicians. Page 263, issue of August 15.

NOVEMBER 14 — American Conference on Industrial Health. Page 648, issue of October 17.

NOVEMBER 15 — Massachusetts Society for Mental Hygiene. Page 648, issue of October 17.

NOVEMBER 20 — Boston Society of Biologists. Page 742.

DECEMBER 10 — New England Society of Anesthesiology. Notice above.

DECEMBER 27–29 — National Convention of the Association of Medical Students, Boston.

JANUARY 4, 1941 — American Board of Obstetrics and Gynecology. Page 1064, issue of June 20.

MARCH 8 — American Board of Ophthalmology. Page 201, issue of August 1.

APRIL 21–25 — American College of Physicians. Page 1065, issue of June 20.

MAY 21, 22 — Massachusetts Medical Society, Boston.

JUNE 2–6 — American Medical Association. Cleveland, Ohio.

DISTRICT MEDICAL SOCIETIES

FRANKLIN

NOVEMBER 12.

JANUARY 14.

MARCH 11.

MAY 13.

Meetings will be held at 11 a.m. at the Franklin County Hospital, Greenfield.

SUFFOLK

NOVEMBER 7 — Censors' meeting. Page 305, issue of August 22.

JANUARY 29 — Page 604, issue of October 10.

APRIL 30 — Page 604, issue of October 10.

WORCESTER

NOVEMBER 13 — Grafton State Hospital, Grafton.

DECEMBER 11 — St. Vincent Hospital, Worcester.

JANUARY 8, 1941 — Worcester City Hospital, Worcester.

FEBRUARY 12 — Worcester State Hospital, Worcester.

MARCH 12 — Memorial Hospital, Worcester.

APRIL 9 — Hahnemann Hospital, Worcester.

Supper at 6:30 p.m. followed by a business meeting and scientific program.

BOOK REVIEWS

Introduction to Medicine. By Don C. Sutton, M.D., with introduction by Ada Belle McCleery. 8°, cloth, 642 pp., with 144 text illustrations and 14 color plates. St. Louis: C. V. Mosby Company, 1940. $3.25.

There are a number of difficulties in writing a textbook of medicine for nurses. The question of elimination of a large amount of material, the simplification of the language, the emphasis on diagnostic tests with which the nurse must be familiar and the particular attention that must be given to drug therapy make a book of this type different from the ordinary text for medical students. The author has succeeded in evaluating his material and has produced a book which should be of interest to nurses.

Most of the illustrations, however, are poor, and there are too many dealing with physical diagnosis. Most of them were taken from a book written by the same author under that title. The type is larger than necessary, the paper is poor and in general the book presents a shabby appearance. It cannot be highly recommended.

Clinical Parasitology. By Charles Franklin Craig, M.D., M.A. (Hon.), and Ernest Carroll Faust, M.A., Ph.D. Second edition, thoroughly revised. 8°, cloth, 772 pp., with 244 illustrations. Philadelphia: Lea & Febiger, 1940. $8.50.

This volume is devoted to a systematic treatment of the animal parasites of man. While primary emphasis is placed on the morphology and biology of the parasites, symptoms, therapy and prophylaxis are also considered.

The material is divided into sections on the protozoa, helminths (including leeches) and arthropods. A helpful technical appendix which gives methods of cultivation and preservation of the parasites, an extended summary of the international rules of zoological nomenclature and a twenty-six page bibliography are included.

The style is clear and positive; the presentation of controversial material is reduced to a minimum. The numerous illustrations, both originals and copies, are well chosen and well reproduced, and considerably aid the textual explanation.

The special competence of the authors in the fields of protozoology and helminthology makes these sections noteworthy. The account of the history and synonomy of *Plasmodium ovale* is most interesting. The opinion concerning the sarcosporidia, namely, that "it is likely that further investigation will show that the latter are also fungi," is not likely to win universal acceptance nor is the other opinion that the complement-deviation test in amebiasis constitutes one of the "more important landmarks in the development of human parasitology." The helminthologist will note the account of the life history of *Strongyloides stercoralis,* including the description of the parasitic male.

The revised text has been very carefully assembled, and the inevitable errors seem extremely few. Present evidence does not warrant the statement, "Neither of these agents [chloramine and chlorine] can be employed to render water safe that is contaminated with the cysts of this parasite [*Entamoeba histolytica*]." The translation of "lagochilascaris" as "hare-beaked" seems not more accurate and less illuminating than "hare-lipped," since cleft lips are a characteristic of this genus.

The book is designed primarily for the physician and the student of medical parasitology. The reviewer has no hesitation in recommending it as one of the most useful of the modern texts on the subject written in English.

The Patient's Dilemma: The quest for medical security in America. By Hugh Cabot, M.D. 8°, cloth, 284 pp. New York: Reynal & Hitchcock, 1940. $2.50.

The Patient's Dilemma is not a heavy scientific tome but rather, as the author confesses, a philosophical expression of "the faith that is in me." One might expect from the former professor of surgery and dean of the University of Michigan Medical School and consultant and teacher at the Mayo Clinic a book replete with the wisdom gained of long medical experience, to which, in addition, rare character and ethical insight had been brought. But other men equally competent in medicine have not shown the corresponding grasp of economic and social theory so amply demonstrated in this book.

The book opens with a brief survey of the revolution in modern medical practice as a consequence of the impact of recent scientific discoveries, goes on to define the elements of good medical care, estimates its cost, argues ably for the superior quality and lower cost of group practice and outlines a conservative but progressive plan for getting good medical service to the majority of the populace.

The author is convinced that the role of charity must decline, that government co-operation and intervention under the guidance of medical experts must increase if security in this field is to be made general. He is anxious that, in any program to be adopted, public opinion should be represented as well as government, physicians, scientists, hospital administrators and so forth. Many of the old shibboleths of conservatives in medicine are refuted here. Dr. Hugh Cabot is familiar with all the stock arguments against government intervention, weighs them judiciously and objectively and leaves the reader distinctly with the impression that, in Dr. Cabot's opinion, while there are difficulties to be overcome, they are not insuperable. With many of his arguments and proposals a large number of physicians will disagree.

The evidence of need the author reviews well. The problem, according to him, is how to meet it before a combination of pressure groups and unwise politicians bungles the job and prevents the enactment of an effective plan that will not only give good medical service to all but will protect the professional interests of physicians.

Had the book been written a few months later, Dr. Cabot might well have been led to stress the urgency of adopting a program which would furnish good medical service to all in the interest of national strength and defense. For it seems axiomatic that no amount of wealth, no maturity of industrial power, can save a nation in these days of international conflict if the health of its man power is anything less than optimum.